Volume XXIII.
Number 2.

AUGUST, 1902.

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TEXTILE WORLD

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and
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Record.

The
Textile World
Official Directory
OF THE
Textile Industries
OF THE
United States and Canada
FOR 1902
Office Edition, $2.50
Travelers' Edition, $2.00
See Page 413

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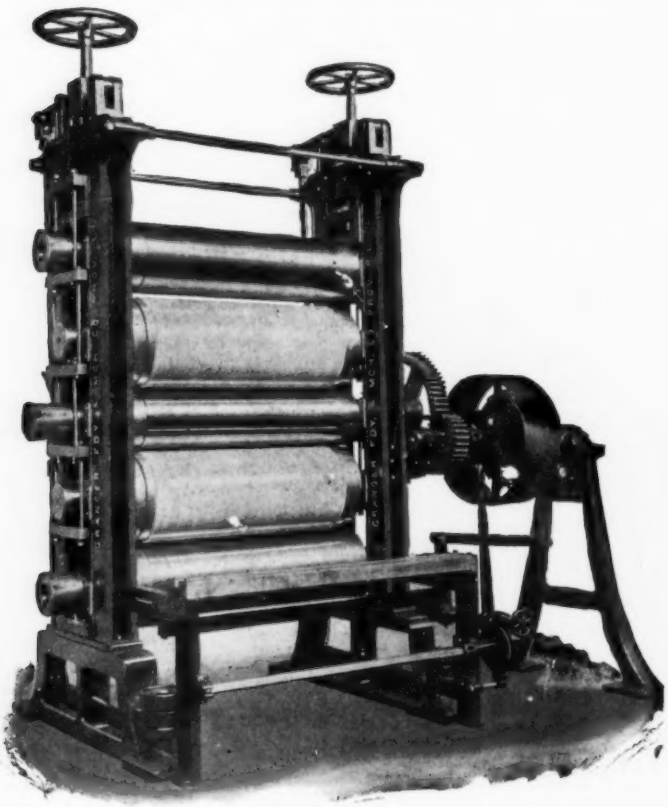
GUILD & LORD,
PUBLISHERS.

95 SOUTH STREET,
BOSTON, MASS.

COPYRIGHT, 1902, GUILD & LORD.

Bleaching, Dyeing, Drying,

And Finishing Machinery.



CALENDERS, MANGLES AND ROLLS.

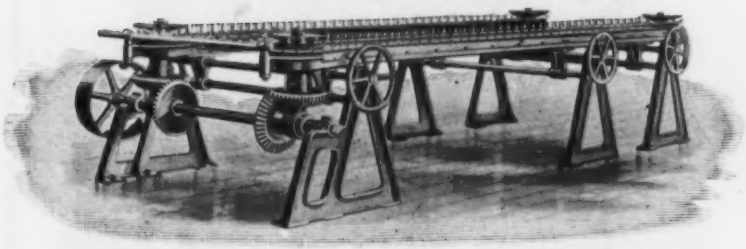
TENTERING MACHINES,
MERCERIZING MACHINES.

Granger Foundry and Machine Co.

PROVIDENCE, R. I.

Bleaching, Printing, Dyeing and Finishing Machinery

For Textile Fabrics.



STRAIGHT TENTERING MACHINE, WITH AUTOMATIC CLAMP. (Patented.)

TENTERING MACHINES.

VIBRATORY (or Swiss) MOTION FOR LAWNS, ETC.

RETURN (8, 10 or 12) returns FOR WORSTED AND WOOLEN GOODS.

HOT AIR (2 or 4 returns) FOR GINGHAMS, ETC.

AUTOMATIC CLAMPS (Patented). SPRING CLAMPS. PIN CHAINS.

H. W. BUTTERWORTH & SONS CO.,

PHILADELPHIA, PA.

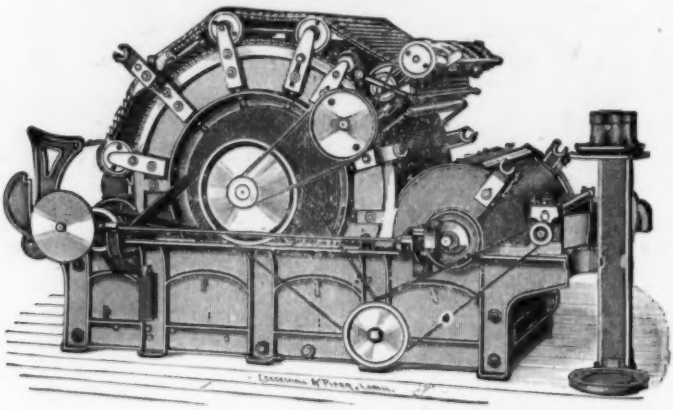
LOWELL MACHINE SHOP,

LOWELL, MASS.,

Builders of

COTTON MACHINERY

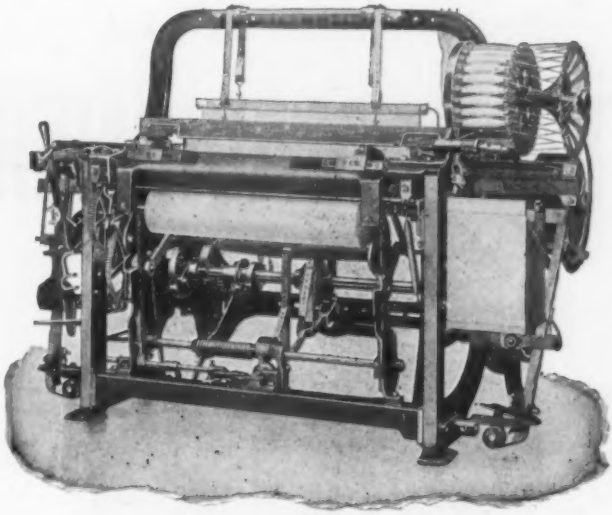
OF EVERY DESCRIPTION.



Revolving Flat Cards, Railway Heads,
Ring Spinning Frames, Fly Frames,
Drawing Frames, Spoolers, Warpers,
Slashers, Looms.

Worsted Machinery.

ILLUSTRATED CATALOGUES SENT ON APPLICATION.



OUR LATEST

NORTHROP LOOM

Although our order list lengthens and strengthens, we do not adopt the simple and inexpensive plan of building without change, but continually add improvements whenever possible. A careful study of the above illustration will prove of interest to adepts in the Art of Weaving.

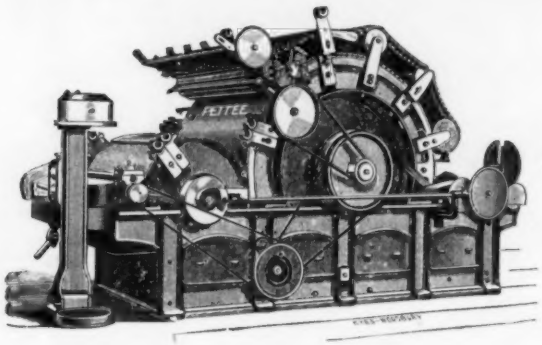
THE DRAPER COMPANY,

Hopedale, Mass.

Saco and Pettee Machine Shops,

Newton Upper Falls, Mass., U. S. A.

COTTON MACHINERY



PICKERS, REVOLVING FLAT CARDS,

DRAWING FRAMES,

RAILWAY HEADS, SLUBBING,

INTERMEDIATE AND ROVING

FRAMES,

SPINNING FRAMES, SPOOLERS.

SHOPS:

Biddeford, Maine.

Newton Upper Falls, Mass.

Southern Agent: A. H. WASHBURN, Charlotte, N. C.

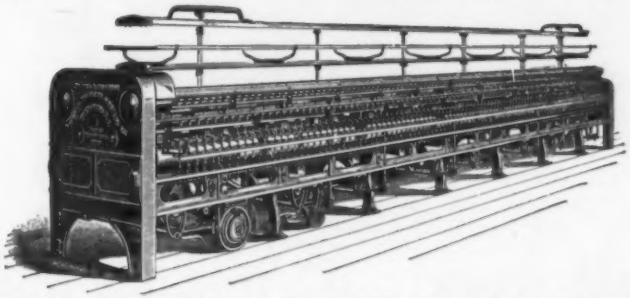
HOWARD & BULLOUGH
AMERICAN MACHINE COMPANY,
LIMITED.
COTTON MACHINERY.

Pawtucket, R.I.

Boston Office, 281 Congress Street.
Southern Offices, 814-815 Empire Building, Atlanta, Ga.

BALE BREAKERS and LATTICES
FEEDERS
SELF-FEEDING OPENERS
BREAKER LAPPERS
INTERMEDIATE and FINISHER LAPPERS
REVOLVING FLAT CARDS
DRAWING FRAMES With Mechanical or Electric Stop-Motion.
SLUBBING FRAMES
INTERMEDIATE FRAMES
ROVING FRAMES

Improved New Pattern Spinning Frames.

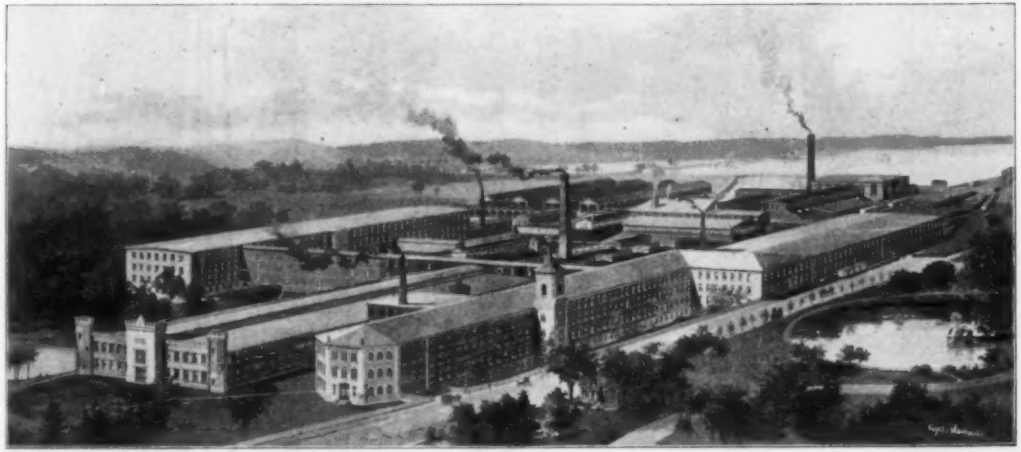


This New Pattern Spinning Frame contains many valuable improvements which will certainly interest you and pay you to investigate. All parts are specially designed and so constructed as to obtain the highest speed and greatest production.

We Invite Investigation and Comparison.

THE WHITIN MACHINE WORKS,

Whitinsville, Mass.



COTTON MACHINERY

Revolving Flat Carding Engines.

Sliver Lap Machines.

Ribbon Lap Machines.

Combers.

Railway Heads.

Drawing Frames.

Spinning Frames.

Spoolers

Twisters.

Reels

Long Chain Quilling Machines.

Looms.

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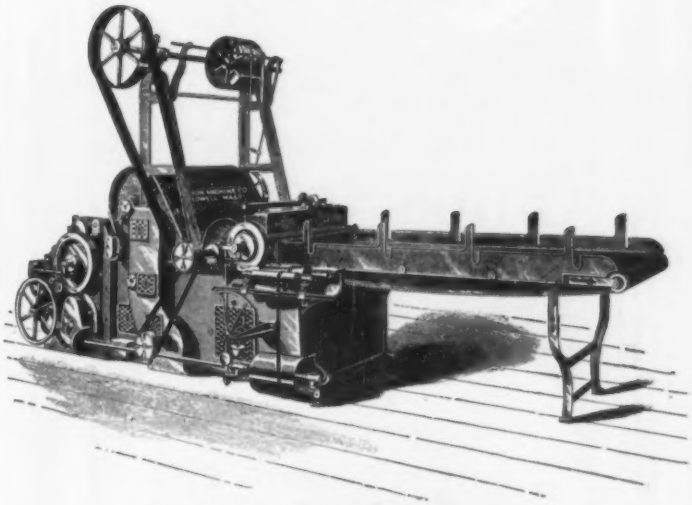
38 South Tryon Street, CHARLOTTE, N. C., and Equitable Building, ATLANTA, GA.

The Best Pickers.

In the Cotton Field nothing equals the
DARKY COTTON PICKER.



In the Cotton Mill nothing equals the
KITSON COTTON PICKERS.

KITSON MACHINE CO., Lowell, Mass.

Largest Builders of Cotton Openers and Lappers in the World.

STUART W. CRAMER, Southern Agt., Charlotte, N. C. and Equitable Building, Atlanta, Ga.

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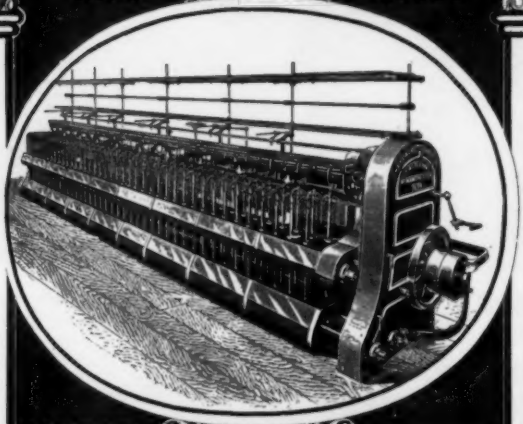
· CARDS · · MULES ·



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CARD CLOTHING · WASTE MACHINERY

COTTON MACHINERY

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Card Room Machinery.
TAYLOR LANG & CO. LTD.
Self Acting Mules.
WILLIAM RYDER
Flyers.
C. CAIN, SON, & GREENWOOD,
Card Clothing of all Kinds.

SPECIALTIES IN
MILL SUPPLIES

WORTHINGTON BLDG. 31 STATE ST., BOSTON MASS.

START RIGHT!

IN A RACE, THE RIGHT KIND OF A START FREQUENTLY DETERMINES THE FINISH.

SO IN MANUFACTURING COTTON, THE PREPARATORY MACHINERY IS ALL IMPORTANT TO THE FINISHED PRODUCT.

THE RIGHT START MAY BE HAD BY USING THE A.T.ATHERTON PREPARATORY MACHINERY. BUILT BY

THE A.T.ATHERTON MACHINE CO.

PAWTUCKET, R. I.

JOHN HETHERINGTON & SONS, LD.

Manchester, England.

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MACHINERY FOR

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MAY BE SEEN IN OPERATION AT MY OFFICE.

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Over Three Million Spindles in the United States.

Sole Importer for United States and Canada,

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J. S. COTHRAN, Charlotte, N. C., Southern Agent.

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Barber Knotters
Now in Use.

Barber & Colman,

11 Pemberton Sqnare,

BOSTON.

ROBT. C. WEBSTER, Manager.

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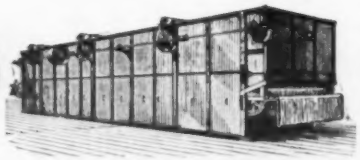


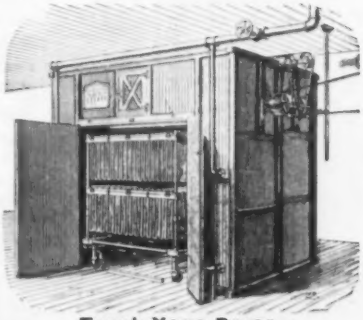
Automatic Yarn Dryer.

For Hosiery, Underwear, Yarn, Cotton Stock, Wool, etc.

CARBONIZING MACHINES,

YARN SCOURING MACHINES,

BREASTS, BURRING MACHINES



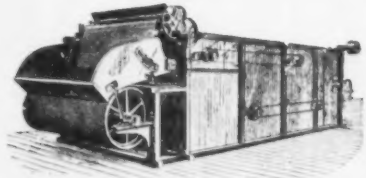
Truck Yarn Dryer.

FEED ROLLS, LICKERS-IN.

Phila. Textile Machinery Co,

Hancock and Somerset Sts.,

PHILADELPHIA, - PENN



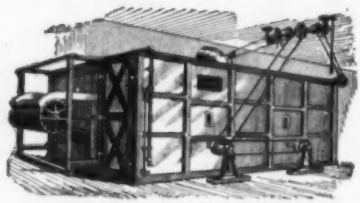
Automatic Cotton Stock Dryer.

GARNETT MACHINES

"HURRICANE" DRYERS

—FOR—

WOOL, COTTON, HAIR, YARN, STOCKINGS, UNDERWEAR, &c.



Automatic Stock Dryer for Cotton and Wool.

CARBONIZERS,

Yarn Scouring Machines.

"HURRICANE" FANS

for Ventilating and Drying.

Best in Construction. Lowest in Price

Plans, Estimates and Catalogues sent upon application

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A PERFECT PIN TICKET

For Cloth Samples and Garments.

Easily and quickly applied, to fabrics of any weight.
Securely attached and yet easily detached if necessary to remove.
The machine does the whole thing.
It is cheap, serviceable and durable.

We also make a machine which

PRINTS the TICKETS as they are attached if desired.

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BUILDERS OF

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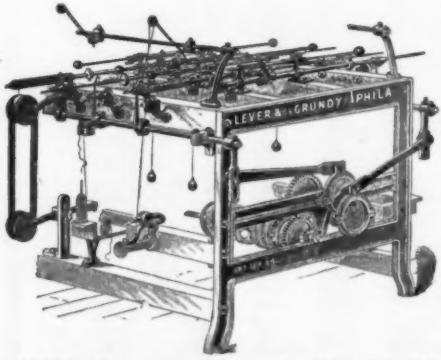

FILLING COP WINDING MACHINES. Spindles driven by belts or by gears. To wind cops. Cops to weave from the inside, or butts to weave from the outside. Can be made to wind any kind of filling from the coarsest to fine numbers. These machines will put the most yarn in as given size of shuttle than any other machine in use.

BANDLESS SPINDLE SPOOLING MACHINES. Adapted to the finer grades of yarn and to the finest silk.

PRESSER DRUM SPOOLING MACHINES. Arranged to spool in any way the trade requires.

BANDLESS VARIABLE SPEED MACHINES. To wind the large bobbins used in knitting mills.

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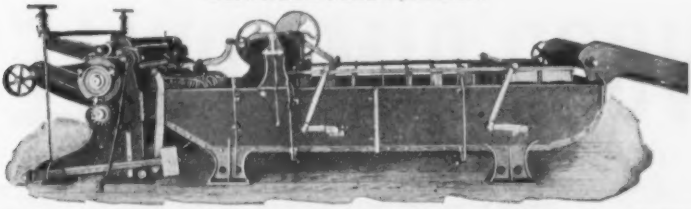
GRANITEVILLE, MASS.



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PHILADELPHIA.

THE LATEST AND BEST

LOOMS, DOBBIES, HARNESS MOTIONS

BEAMING SPOOLING WINDING DYEING AND SIZING MACHINERY

POWER TRANSMITTING MACHINERY.
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All Styles and Kinds for Flat and Round Braids.

SOLID SASH AND CURTAIN CORDS.

Shoe and Corset Laces, Banding and all

BRAIDED FABRICS.

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General Foundry and Machine Work, Repairing

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WOOD-RIM PULLEY

With Iron Hubs and Arms.

HEAVY SINGLE ARM PATTERN.

This illustration shows our heavy single arm pulley. The one selected for this cut was 48″ in diameter, with a face 15″ in width, and strong enough for a three-ply belt. The rims are built either split or solid with clamp hubs.

CHASE PULLEY COMPANY,
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IS TO DESIGN, MANUFACTURE AND
INSTALL

Complete Power Transmission Equipments

FOR THE FACTORY, MILL OR
POWER HOUSE

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Our line embraces every good thing in Power Transmitting Appliances. Constant improvement is our watchword, with the abstract fact always kept in view of securing the reduction of fractional losses to the minimum in these devices.

An experience of twenty-three years has taught us how to secure the maximum from the minimum—that is, the maximum of effective power transmitted from the minimum of coal pile energy, a fact we shall be pleased to demonstrate.

We originated the "Independence" Wood Split Pulley, now universally used the world over. We were also the pioneer manufacturers and patentees of the "Dodge" American System of Manila Rope Transmission—acknowledged as the most economical and modern means of transmitting and distributing power. We have installed thousands of these drives.

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Entire Outfits for New Mills, or small and odd items that you don't know just where to obtain, can be found at the

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PROVIDENCE, R. I.

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Sole Manufacturers of

Dixon's Patent Locking Saddles and Stirrups

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

The Stirrup is always in place.

No bent stirrup resting on rolls.

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Spinners' Supplies in general.

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Looms for Plain and Fancy Weaving.

Represented in the South by O. A. ROBBINS CHARLOTTE, N. C.

SPINDLES AND FLYERS.

For Cotton, Woolen, Worsted, Silk and Flax Machinery.

Also Steel Caps, Bolsters, Steps, Tubes, etc.

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Formerly with Bridesburg Mfg Co.

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For All Classes of Work.

MATHER & PLATT'S Dyeing and Finishing Machinery.
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CRITCHLEY'S Card Clothing for Woolen and Worsted.
GEORGE HODSON, Ltd., Looms for Worsteds, Etc.
TEXTILE MACHINERY ASSOC., Ltd., Flax, Hemp, Jute, Etc., Machinery.

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HEDDLE FRAMES.
WIRE HEDDLES.
TEMPERED STEEL WIRE
STRIPPER CARDS.

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BIRCH BROS.,
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Mill Sewing Machines.

Sews any fabric, wet or dry, thin or thick, fine stitch or coarse stitch.
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Bleaching Dyeing and Finishing Machinery.

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BUILDER OF
IMPROVED SPINNING AND TWISTING MACHINERY,
For Hard or Soft Twines, Lines, Cordage, etc.
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Write for particulars in regard to our new machine for spinning heavy Cotton Yarn direct from Drawing Silver for Cotton Rope, etc.

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Manufacturers of
BRAIDING MACHINES OF SUPERIOR QUALITY
for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, **Doublers**, Measuring Machines, Reelers, Singeing and Finishing Machinery. Special machinery.

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Our Patented Specialties.
DOUBLE RIBBED RINGS, U.S.
STANDARD TRAVELER CLEANERS.
METALLIC BURNISH LIKE THAT PRODUCED BY THE TRAVELER.

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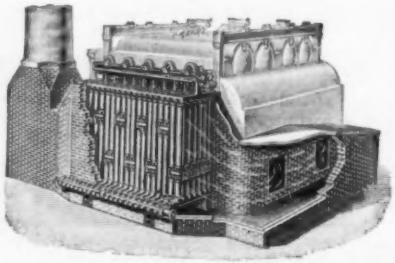
NATIONAL RING TRAVELER CO.
—MAKERS OF STANDARD—
SPINNING AND TWISTING TRAVELERS
OF EVERY DESCRIPTION.
PROVIDENCE, - - R. I.
A. CURTIS TINGLEY, Treasurer

MILLS, BLEACHERIES, DYE WORKS

10 to 20 per cent. of your fuel expenditure may be saved.

Is It Worth While? If So, Write Us For Information.
30,000,000 h. p. in Use.



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MATTEAWAN, - - - - NEW YORK.

Sole Manufacturers in the U. S. A.

JACOB WALDER, - Paterson, N. J.
Sole Manufacturer in United States of
BRASS AND STEEL MAILS
Liberal Discount to Dealers.

Something New In Heddles!!

A Heddle Made Out of One Piece of Steel.
No Twist in the Eye.
Cheaper Than Imported Heddle.
Patented.

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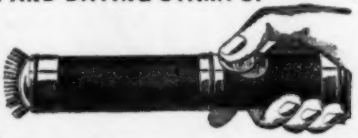
Watchman's Clocks, Electric and Portable;
ENGINE ROOM AND FACTORY CLOCKS;
TIME AND DATING STAMPS.

ELECTRIC TORCHES.



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Send for Catalogue & Prices. 310 Market St., Phila., Pa.

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MANUFACTURER OF

Card Clothing of Every Description

FALL RIVER, MASS. HENRY ASHWORTH, Agent.

J. H. MOORHOUSE A. A. ZAJOTTI

Edma Card Clothing Company,

Manufacturers of all kinds of **CARD CLOTHING** Set in the Best Foundations

Stripping Cards and Napping Wire a Specialty. Correspondence Solicited.

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Thread and Silk **SPOOLS** of any description,

We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted.

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Claremont, N. H.

Manufacturers of

Cotton and Woolen BOBBINS.

We make a specialty of Wool Filling and Warp.

Not connected with any "Trust" or "Combination."

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Secure our prices on bobbins with metal shields of all kinds.

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.....NASHUA, N. H.

Manufacturer of **Spools, Bobbins, Skewers, Shuttles,** and Wood Turning, of every description.

A PERFECT FIT

COP TUBES

is our best recommendation.

PROMPT DELIVERY—NEXT.

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Get the Best! It Pays. Picker Sticks made of second growth North Carolina Hickory, thoroughly seasoned, are the best. We make them. Mail us a sample stick and get our prices. Orders filled promptly.

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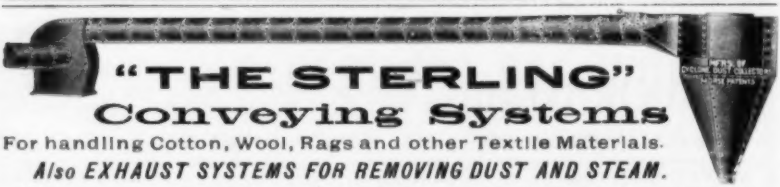
SHAW'S VICTOR TRAVELERS

MANUFACTURED BY

Victor Shaw Ring Traveler Co.

Incorporated 1899

23 SABIN STREET. PROVIDENCE R. I.



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Conveying Systems
For handling Cotton, Wool, Rags and other Textile Materials.
Also EXHAUST SYSTEMS FOR REMOVING DUST AND STEAM.
Blowers. Exhaust and Disk Fans. Cyclone Dust Collectors.
THE STERLING BLOWER & PIPE MFG. CO.,
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PETER ROGERS, 1832 TO 1841. ESTABLISHED IN 1832. HENRY E. ROGERS, 1841 TO PRESENT TIME.
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MANUFACTURER OF
All Rag Press Boards and Fenders,
FOR HOT AND COLD PRESSES IN KNITTING, WOOLEN AND SILK MILLS.
All regular sizes, thicknesses and colors, for this trade carried in stock for immediate shipment. Samples and quotations gladly furnished. Also, maker of
JACQUARD CARDS, FULLERS, INSULATING AND LEATHER BOARDS.

CARDER'S TOOLS.
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For Setting Up Bent Teeth of Card Clothing, with a variety of other tools used by Carders and Manufacturers. Send for circular.
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USED IN OVER 750 MILLS.
MADE IN 40 PATTERNS.
TRY THEM.
THE VICTOR SHUTTLE CO.,
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Infringers will be Vigorously Prosecuted.

SCAIFE FILTERS
LOWEST PRICES
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SCAIFE SYSTEM OF SOFTENING AND PURIFYING WATER.
For Steam Boilers, Textile Works, Bleachers, Etc
PREVENTS BOILER SCALE.
Furnishes pure, soft, clear water for every purpose.
RESULTS GUARANTEED.
Send for illustrated catalogue...
Wm. B. Scaife & Sons Company,
PITTSBURG, PA.
Founded 1802.

Wyandotte Washing Soda

For Scouring Wool and Finished Goods.

Cohoes, N. Y., Feb. 3rd, 1902.

The J. B. Ford Company, Wyandotte, Mich.

Gentlemen: — We have been using your Wyandotte Soda in connection with a neutral soap for the washing of the garments that we manufacture, using one half the quantity of soap that we formerly did, and the same amount of Wyandotte Soda as we do soap. The result is that our finished goods are very soft and lofty and the color is all that we desire.

It gives us pleasure to advise you that we are very much pleased with the Wyandotte Soda, and can cheerfully recommend it to any of the textile mills that have occasion to wash their garments.

Yours truly,

(Signed) STAR KNITTING CO.

A. I. Whitehouse, Sec'y.

If you are not using **Wyandotte Washing Soda**, order one to five barrels from your supply house, using it according to directions, and if results are not satisfactory, return the unused portion at our expense; the trial shall cost you nothing. For full directions write

The J. B. FORD COMPANY,

MANUFACTURERS OF

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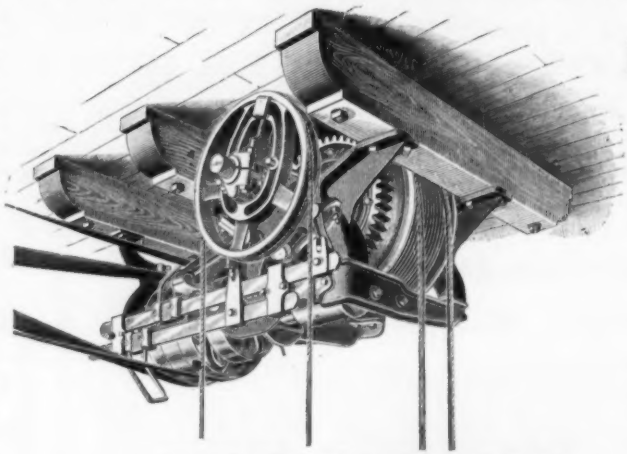
We also make the Burt Exhaust Head.

Also to be had from Oil Companies, Engine Builders and Power Contractors.



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The Filtering Cylinder and EVERY PART of the

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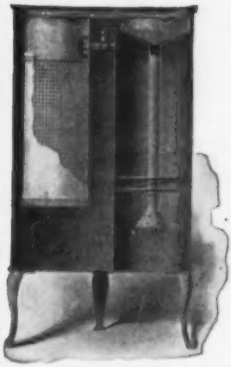

May be quickly and easily removed and cleaned, enabling it to be always kept in perfect filtering condition. In this essential feature of a perfect and complete filter, the **White Star** is not even approached by any other device.

We have published a beautiful booklet, "H," containing numerous halftones, showing the entire filtering operation and process of cleaning, and giving full information. Send for it and learn all about a perfect and practical filter.

"Since receiving the Filter from you Jan. 15th, '02, we have saved 364 gals. of oil, which amounts to $54.60.

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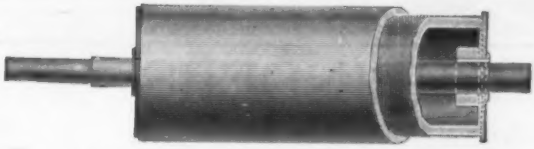

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FOR ALL PURPOSES IN WOOLEN AND COTTON MILLS.

Our Rubber Coverings are strictly high grade. Thousands of users find them satisfactory and economical.

When it's anything about rubber ask us.

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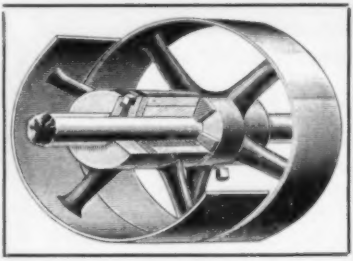

You don't want friction,
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but you stand the nuisance of oil, in order to lessen friction—and so you get *both*.

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They're unequalled for loose pulleys and light shafting

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FOR
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MACHINERY.
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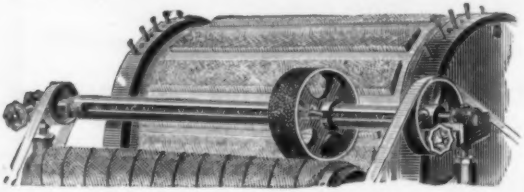

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Repairs promptly attended to. Write for information and prices.

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OLD METALIC BURR CYLINDERS COVERED WITH STEEL RINGS
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MANUFACTURERS OF

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HARD & FLEXIBLE FIBRE : : : :

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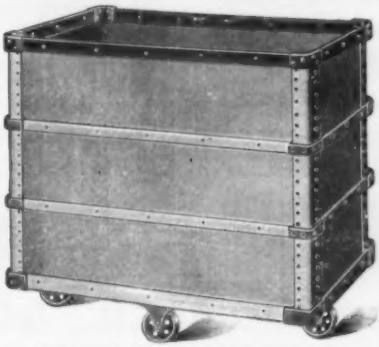
The "20th Century" Laminar Can.

Laminar Taper Box with hardwood shoes. Top View.



Laminar Car or Truck with Corners and Steel Top Rim.

Laminar Taper Box with hardwood shoes. Bottom View.

VULCAN FIBRE ROVING CAN.

BODY—Vulcanized Fibre. SIDE SEAM—Riveted with Patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation: Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one half pound per inch diameter. SIZE—All cans to an exact size, perfectly round and true. DURABILITY—Superior to any other can.

ALSO MANUFACTURERS OF HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

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THE "STAR" VENTILATOR.

STORM PROOF. EFFECTIVE.

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THE COMBINATION SKYLIGHT "STAR" VENTILATOR.

Light and Ventilation combined, and the best of both. Our booklet will be mailed upon application.

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FIG. 24.

CANVAS AND STEEL FRAME MILL BASKETS

Are replacing all other kinds where hard usage is given and where **lightness, strength, durability** and **cheapness** are a consideration. Some of the comparative results in big mills are remarkable. Send for our booklet. We make all styles and shapes for every kind of mill use.

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BOTTLE BRUSHES

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CYLINDER COMBER DUSTERS

Will clean parts of Comber Machines not touched by any other brush, also used to good advantage on the Spinning Frame, between the spools.

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THE CHAFFEE PATENT CLOTH BOARD,

Made of paper and wood,
Needs no covers,
Will not split
or warp;
Not liable to break.

MFG. BY
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BOX SHOOKS and CLOTH BOARDS.

ELLIOT CLOTH FOLDER AND MEASURER

For Cotton and Gingham Mills, Bleacheries, Print Works, Etc.

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MANUFACTURER AND IMPORTER. ALL WORK GUARANTEED.

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Steel, Malleable, Grey Iron; Bronze, Brass and Aluminum

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1901 PATTERN

Patent Linen Winder for Shuttle Bobbins

With Patent Variable Motion.

Winds from below and from 90″ skeins direct to shuttle bobbins. Impossible to wind yarn any harder. Runs at high speed, gives large production. Cleaners attached, to rub off dross and loose fibres from the yarn.

We also build a line of SPOOLING, WINDING, WARPING and BEAMING MACHINERY. Write for particulars.

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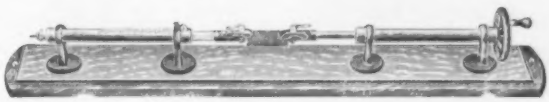
THE HERCULES CLOTH TESTING MACHINE.

Pat. August 2, 1897.



Price $25.00.

Machine sent on ten days approval to any part of the country.

Satisfaction Guaranteed. Correspondence Solicited.

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The Best is the Cheapest.

It is BETTER and CHEAPER to wind yarn by the "Universal" system before shipment from the mill, thus insuring perfect delivery to knitting machines without rewinding.

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Awarded at
The Paris Universal Exposition
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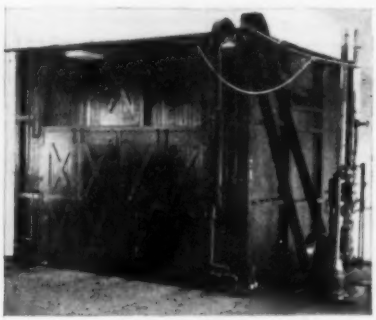

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Has placed upon the market

A Cold Air Drying Machine for Yarn.

He is also building a first-class hot air machine. Claims to deliver yarn in far better condition than most machines.

He also makes kettle sticks and dry and sulphur house poles, also sticks to suit the Wolstenholm Machine from natural water grown cedar, and sticks to suit the Klauder-Weldon, and Lorimer machines from finer grades of lumber. These sticks have been thoroughly tested, and pronounced the best on the market. Guarantee satisfaction to buyers. Write for prices.

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AUTOMATIC FILTERS AND PURIFIERS.

DYERS,
BLEACHERS,
BOILER USERS.

"We take any water you have and give you any water you want" at all times during the year.

Your soap consumption reduced from 10 lbs. up, per 1000 gallons of water used.

Your fuel bills reduced from 10 per cent. to 60 per cent.

COST LOW. **ATTENDANCE NOMINAL.**

OPERATION AUTOMATIC.

Write for Particulars.

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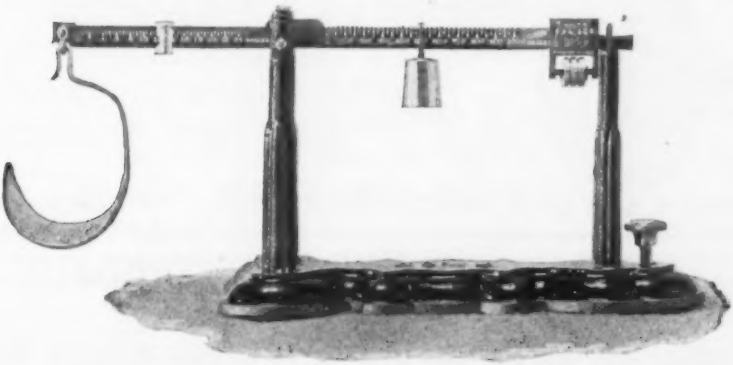
A ROVING or YARN SCALE

That will weigh by HALF GRAINS up to 1,000 GRAINS (over 2 1-4 oz.)



With the Weights All On The Beam. No Lost Weights With This Scale.

One of the Most Sensitive Scales Made. Positive and Accurate. Send for prices.

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MANUFACTURERS OF

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SAMPLE CARDS AND SAMPLE BOXES of Every Description.

MOUNTING OF RIBBONS, SILKS, VELVETS, ETC,. ETC.

Best work guaranteed.

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Write for Circular

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Fallers and Gills.

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WILL SAVE YOU 10% ON YOUR INSURANCE.

THE E. HOWARD CLOCK CO.,

395 to 403 Washington St., Boston. 41 and 43 Maiden Lane, New York

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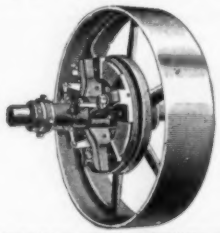

The value of which has proven by 20 years' successful use on all kinds of machinery

Is a Safe Investment.
Frisbie Friction Clutches

have just those attributes and we will be pleased to tell you about them if you will inquire.

THE EASTERN MACHINERY CO., NEW HAVEN, CONN.

The General Electric Company

designs and installs

Electric Power and Lighting Plants for All Classes of Textile Mills.

45,000 Horse Power in Use or Under Contract.

Among other mills equipped with electrical drive in whole or in part by the General Electric Company, are:

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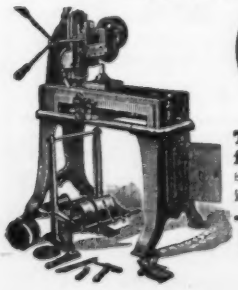

Gear Cutting Machine

Especially adapted for use in Repair Shops. Now in use in **Three Hundred** representative mills, including **Twenty-four** in Fall River, Mass. On application, we shall be glad to submit full particulars, prices, and photographs of the latest improvements. Send for our **1900 Pamphlet**.

THE D. E. WHITON MACHINE CO.,

19 Oak Street, New London, Conn.

LEVIATHAN BELTING

IN

DYEHOUSES AND BLEACHERIES

WILL

OUTWEAR TWO RUBBER BELTS.

Not injured by exposure to heat, steam or moisture.

MAIN BELTING COMPANY,

1219 Carpenter St., Philadelphia.
120 Pearl St., Boston.
55-57 Market St., Chicago.
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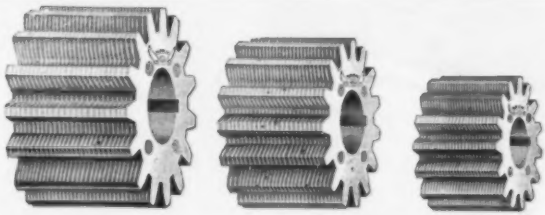


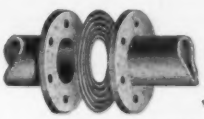
A POSITIVE DRIVE THAT IS NOISELESS

is obtained by running a New Process Noiseless Pinion against an accurately cut metal gear wheel. Let us quote you on a pair. Besides being noiseless New Process Pinions are very durable and prolong the life of the metal gears with which they mesh. WRITE FOR CATALOGUE.

We also make metal gears—spur, bevel and internal.

The New Process Raw Hide Co.,

SYRACUSE, N. Y.



JOINTS MADE ABSOLUTELY TIGHT AND DURABLE BY CORRUGATED

..COPPER GASKETS..

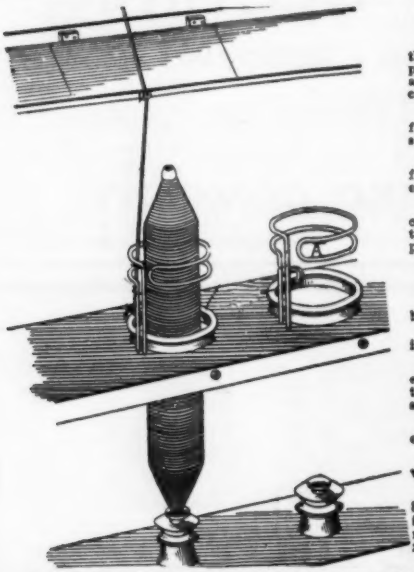
UNITED STATES MINERAL WOOL CO., 141 Liberty St., NEW YORK CITY.

WHEN IN WANT OF BELTING, Oak Tanned or Solid Round or Rawhide Sewing Machine belting of the best quality; Also Black English Picker Leather,

WRITE HENRY POPHAM & SON,
NEWARK, N. J.

ALEXANDER BROS.
BEST OAK BELTING.
PHILADELPHIA.

New Thread Protector for Ring Spinning



The following advantages are claimed for this protector.

1. The speed of the frame will be increased, and also the production; on frames without any protectors or plate separators about twenty-five to thirty per centum, and on frames with separators about twelve or fifteen per centum.

2. The threshing and consequent imperfection and inferiority of yarn and cloth, occasioned by the use of blade separators is entirely obviated.

3. The traverse of the rail can be increased from one-fourth of an inch to one inch, if frame permits, thereby enabling the use of longer bobbins.

4. The life of the traveller is prolonged fully fifty per cent on account of a more even tension being imparted to the traveller, the same being held in a perpendicular position at all points of the traverse.

5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

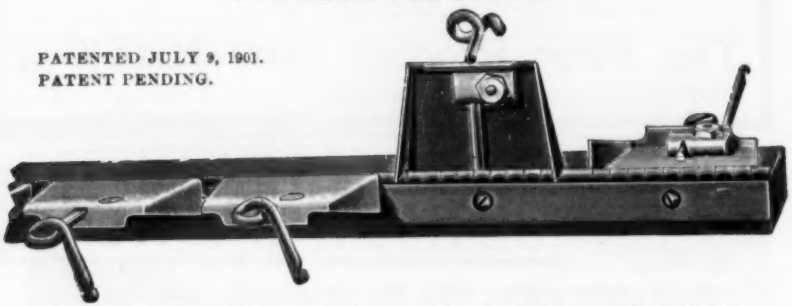
11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separators.

The above results have been obtained in the mills of S Sanford & Sons, Carpet Manufacturers, Amsterdam, N.Y. in whose mills the protectors have been in use on all spinning frames since October, 1899, and by permission we refer to said firm for a confirmation of our claims.

THE RING FRAME THREAD PROTECTOR CO., Amsterdam, N. Y.
Southern Office: 40 Tryon St., Charlotte, N. C., S. J. Smith & Co., Agents.

HOUGHTON'S
All Steel Thread Board
WITH
Hardened Thread Guides.
7 1-2 CENTS PER SPINDLE.

PATENTED JULY 9, 1901.
PATENT PENDING.



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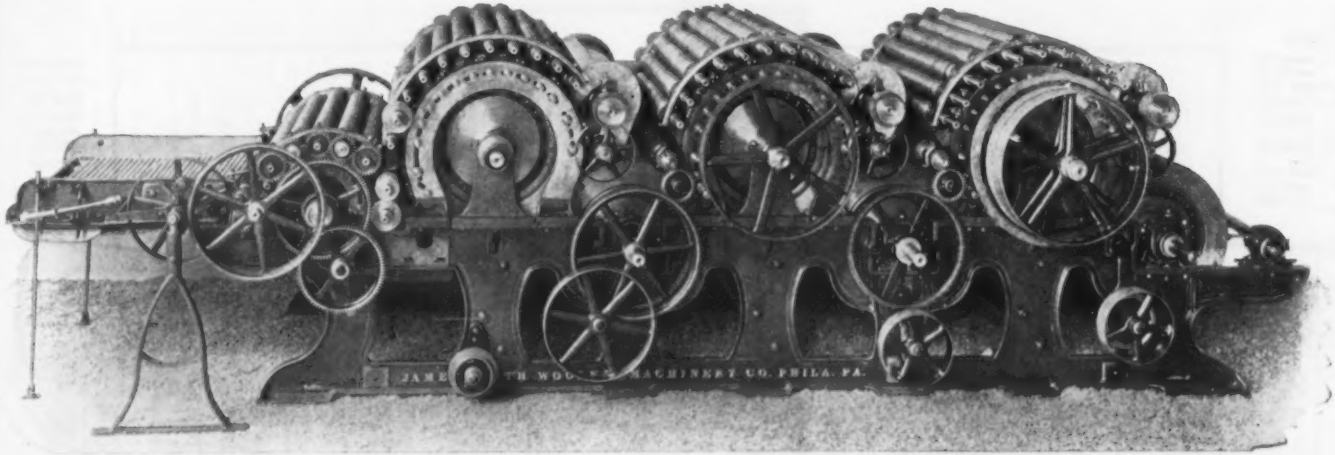

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PUBLICATION OFFICE:
93 South Street, Boston.

BRANCH OFFICES:
The Bourse, Philadelphia. Monadnock Bldg., Chicago.
123 Liberty St., New York.
Oriel Bldg., St. Louis.

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Textile Patents.

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Bobbin Skewer. 704,584. Robert Schofield, New Bedford, Mass., assignor by direct and mesne assignments of two-thirds to Charles Burgers, New Bedford, Mass.

Circular Spring Needle Knitting Machine. 705,505. Frank Wilcomb, Norristown, Pa.

Cloth Cutting Machine. 703,784. John G. Grosheim and Harry H. Grosheim, Cincinnati, Ohio.

Dyeing Apparatus. 704,191. Rochester Illingworth, John T. Mazey and George Naylor, Coventry, England.

Dyeing Apparatus. 704,283. Robert Weirs, Kingersheim, near Mulhouse, Germany.

Device for Untying Hard Knots. 704,357. John W. Mutton, Boston, Mass.

Drag Device for Bobbins of Drawing and Spinning Frames. 705,153. Samuel Smith, Lawrence, Mass., assignor of one-half to Anna A. Peabody, Lawrence, Mass.

Heddle Frame. 704,455. Toussaint J. Fuyat, Hudson, Mass.

Knitting Machine. 703,973. Daniel F. Sullivan, Lowell, Mass., assignor of one-half to Michael J. Sullivan, Randolph, Mass.

Knitting Machine. 705,203. Daniel A. Bucker, West Peabody, Mass.

Kindergarten Loom. 703,799. Beatrice E. Lindberg, Faribault, Minn.

Kindergarten Loom. 703,815. Jonathan E. Painter, Minneapolis, Minn.

Lace Making Machine. 705,539. August Matitsch, Vienna, Austria-Hungary.

Loom Beam Lock. 703,667. Oscar L. Owen, Whitinsville, Mass.

Loom for Weaving Velvets. 703,580. William G. Hartley, Lowell, Mass.

Loom Shuttle. 703,992. Leon W. Campbell, Woonsocket, R. I., assignor of one-half to Malcolm Campbell, Boston, Mass.

Mechanism for Grinding Flats in Carding Engines. 703,645. Joseph Fossel, Boston, Mass.

Means for Driving Shuttles of Looms. 703,419. John Houston, Sunderland, England.

Machine for Disintegrating Fibrous Plants. 705,140. Manuel Prieto, Mexico, Mexico.

Narrow-Ware Loom. 704,295. John C. Brooks, Paterson, N. J., assignor of one-half to Robert H. Sterrett, Paterson, N. J.

Process of Producing Long and Short Fibers from Reeds, Rushes, or Similar Plants. 703,814. Ludwig V. Ordody, Budapest, Austria-Hungary.

Producing Weave Diagrams. 703,850. Jan Szczepanik, Vienna, Austria-Hungary, assignor to Societe des Inventions Jan Szczepanik & Cie, Austria-Hungary a Firm.

Producing Weaving Diagrams. 703,849. Jan Szczepanik, Vienna, Austria-Hungary, assignor by direct and mesne assignments to the Barmer Bank-Verein, Hinsberg, Fischer & Comp, Barmen, Rhenish Prussia, Germany, a corporation of Germany.

Process of Treating Fibrous Substances. 704,259. Enoch T. Holmes, Chicago, Ill., assignor of one-third to John C. Brocklebank, Chicago, Ill.

Process of Treating Fibers of Annual Growth for Industrial Purposes. 704,698. Simeon O. Edison, East Orange, N. J.

(Continued on page 333.)

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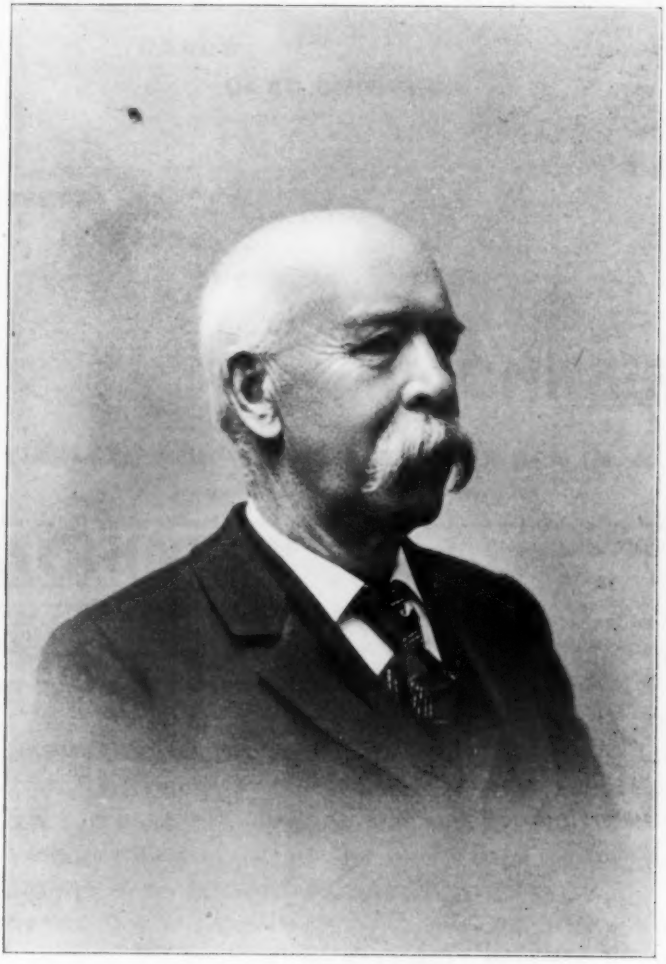

CHARLES D. McDUFFIE.

TEXTILE WORLD.

Vol. XXIII. AUGUST, 1902. No. 2.

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CHARLES D. McDUFFIE.

Charles D. McDuffie was born in Rochester, N. H., on March 4, 1829, and in 1849, after attending the district school, went to work in the mills at Lowell, Mass. Three years later he caught the gold fever and went to California in search of a fortune. He remained there a year, when he returned to Salem, Mass., entering the Naumkeag Steam Cotton Mills as an overseer, a position which he filled for fifteen years.

In 1868, he accepted the position of superintendent of the Whittenton Mfg. Co., Taunton, Mass., where he remained for seven years. On March 1, 1875, he went to Lawrence, Mass., as agent of the Everett Mills, remaining there until October 1, 1880, when he accepted the position of agent at the Manchester Mills, Manchester, N. H., which he held until his death on the 5th of last month. To the present generation Mr. McDuffie is best known by reason of his connection with this large manufacturing corporation, which he managed successfully for twenty-two years.

Mr. McDuffie's fraternal associations were few. He was a Free Mason, being a member of Star King Lodge and Winslow Lewis Commandery of Salem, Mass. He was also a member of the Derryfield Club and of the Textile Club, the latter being an organization comprising in its membership the leading mill men of New England.

Mr. McDuffie's pleasures were the simple social enjoyments of the home and the small circle of immediate friends. He was the leading spirit in a great corporation, a keen student of national and international affairs and industrial conditions, and had the happy faculty of finding unbounded pleasure in the quiet of his home.

Although careful and conservative in his actions, he was not the man to fall into a rut. During his management of the Manchester Mills, the great print works of that corporation were built, which are probably the largest works of their kind in America and perhaps in the world.

Mr. McDuffie was for many years a trustee of the Manchester Savings Bank and succeeded Daniel Clark as president of that institution. He was connected with the Unitarian Society, of which he was president for several years. He was a member of the Home Market Club and one of its vice-presidents.

Rising from the ranks himself, Mr. McDuffie was in complete sympathy with the help in the mill. He used them fairly and insisted that they should use him and the corporation for which they were working in the same way. This was the secret of his success in managing the workers under his authority. He was a good judge of human nature, and many successful mill men today owe their advancement to Mr. McDuffie's recognition of their ability.

For half a century Mr. McDuffie was continuously connected with the active management of cotton manufacturing corporations, and attained an unusual degree of success. Opportunity came to him and always found him ready.

Mr. McDuffie was married on Nov. 30, 1850, to Laura B. Durgin of Lowell, Mass., who survives him. He also leaves two sons, Frederick C. McDuffie of Lawrence, Mass., the treasurer of the York Manufacturing Company of Saco, Me., and of the Everett Mills of Lawrence, and Charles Henry McDuffie of this city, who has assisted his father in the Manchester Mills for several years.

MONTHLY COMMENT.

Cuban Imports of Cotton Goods. The cotton goods brought into Cuba during February of this year were valued at $335,013, made up as follows: Cloths, $50,060; muslins, $188,151; apparel, $8,713; yarn, $15,416; quiltings, $1,910; velvets, $3,362; tulles, $20,389; knit goods, $28,562; all other, $18,449.

Great Britain supplied by far the largest part of these goods, 58 per cent., the other 42 per cent. being divided as follows: Spain, 19 per cent.; France, 6 7/10 per cent.; Germany, 5 1/10 per cent.; United States, 8 8/10 per cent.; all other, 2 4/10 per cent.

Depression in English Cotton Mills. The situation in the cotton trade of England has grown still worse during the past month. The spinners are the worst sufferers, and for several months have been trying to mend matters by running four days per week. The reduction of product has not proved sufficient, either to raise the price of yarn or lower the price of cotton so that the English spinner could make a profit or even avoid a loss.

The situation in German and French spinning mills is no better, and in fact American spinners of coarse cotton yarn are facing the same problem of how to make a profit when the cost of their product exceeds the selling price.

The Dyeing and Finishing of Textiles in establishments devoted exclusively to those trades has, according to the census statistics, increased in this country by leaps and bounds during the last forty years. In 1860, the total wages amounted to but $1,088,296, and in 1900 to $12,726,316. Forty years ago the employees numbered 4,005, today there are 29,776.

This increase of separate establishments for dyeing and finishing is doubtless due to the increased cost of these processes when carried on on a small scale. The difference between the cost of either dyeing or finishing in a small mill and the cost of the same process in a large establishment specially equipped with machinery and help for the work is a profit in itself, and explains why small manufacturers find it profitable to hire this work done by other firms.

Cotton Raising in the British Empire. There is no mistaking the genuineness of the alarm in England as to her supply of cotton, nor is this alarm without reason.

Cotton manufacturing is one of the leading English industries. The value of the raw material imported in 1901 to supply English cotton mills is reported by English authorities at $203,976,630. Of this amount only $3,438,450, or 1 7/10 per cent. came from British possessions, while the United States supplied over 82 per cent. of the cotton coming from foreign countries.

One thing that greatly disturbs Lancashire is the steadily increasing quantity of cotton absorbed by American, and particularly Southern mills.

A few weeks ago a meeting of representatives of the Lancashire cotton spinning industry was held at Manchester to consider what they look upon as a crisis, and to take measures to promote the raising of cotton within the empire. At this meeting, it was decided to raise a preliminary fund of $250,000 to start

the work, which as one speaker stated was "prompted by a philanthropy with 5 per cent. at the end of it." A representative of the operatives stated that the stopping of mills this year on account of lack of cotton had cost his association $75,000.

Numbering Cotton Yarn in Germany. Last month we called attention to the controversy in Germany over the proposed law to require cotton yarn imported into that country to be spun to metric sizes. Owing to the strong opposition offered by German weavers, the proposition has been defeated in the Customs Tariff Committee of the Reichstag, the reason assigned for this action being the serious loss and disturbance of trade that would follow any attempt to forcibly change the established custom of the German textile trade in the manner of yarn numbering, which is now based principally upon the English system.

Wages for Sheep Shearing. During the past month strikes have occurred in every branch of the woolen industry, from sheep shearing to garment making. The shearers' strike calls attention to the high wages paid for this work, which, however, lasts for but a few months of the year. The shearers are paid by the head, and it is stated that shearing 100 sheep is a small day's work. The price which the Montana strikers wanted advanced was 8 cents per head, with ¼ cent deducted for tying the fleece. For 100 sheep this would amount to $7.75 per day, which is by no means a starvation wage. The demand was for 9 cents per head, with no deduction for wages. The strike quietly ended by the shearers returning to work at the old rate.

Prices in the Home and Foreign Markets. The opponents of the present high tariff are seeking to discredit it by exhibiting a long list of American products that are sold for less in the foreign market than in our own. At first sight this appears to be a hardship on the American consumer, and will doubtless have its effect in shaping opinion on the tariff question, which is always with us. Without entering into a detailed discussion of this question, we wish to call attention to one American industry whose products are all sold at home at prices which today mean a loss to the manufacturer. We refer to the spinning of coarse cotton yarn, a business which is located chiefly in the Southern states. It has been boomed far beyond the capacity of the home market to absorb its products, and selling prices have for many weary months remained below the cost of production. Many mills are running short time and a further cut in production is talked of. The low prices for coarse cotton yarns, instead of benefiting the knitters and weavers who use them, have had the opposite effect. Prices for the coarse woven and knitted fabrics have gone down in proportion, and the result has been demoralization in every branch of the industry, without perceptible benefit to the consumer. Would it not be far better if this surplus of coarse yarns were sold abroad at foreign prices and our home prices maintained at the American level? In such a case the mills would be steadily employed, large amounts would be distributed for wages to American workers, and the restoration of prices of knit goods and coarse cottons to a profitable level would work no hardship to the consumer, just as the depression of these prices has brought no benefit to him. The only remedy for a congested market is to produce less or sell more. As the home market cannot absorb any more coarse cotton yarn, the solution lies in dumping the surplus on the foreigner or shutting down the mills. Which will it be?

Canadian Woolen Industry. Under the preferential tariff by which English goods are admitted at a rate one-third less than that placed on goods from other countries, the value of the woolen goods imported into

Canada has been about ten times as much per capita as the imports of woolens into the United States. The result, naturally, has been disastrous for the Canadian industry, and the orders for army goods to supply the troops in South Africa which the home government placed with Canadian mills, have been but a drop in the bucket compared with the vast imports of foreign made fabrics. The close of the South African war removes the slight relief afforded by the army contracts, and the woolen manufacturers of Canada are now confronted with a prospect even darker than the existing conditions, under which so many of them have failed or been compelled to close their mills.

Sale of English Mills. Some weeks ago an item purporting to be a despatch from London, gave the details of a scheme by which several large English cotton mills were to be sold to an American syndicate for $15,000,000. The proposed transaction was so extraordinary that we communicated with one of the English firms mentioned, and asked for a confirmation or denial of the report. Their reply was as follows:

"We are very sorry to say the report is not correct."

Cotton manufacturing in England and on the continent of Europe is at present under a cloud. Raw cotton is high and in spite of low wages the cost of the goods exceeds the price they can be sold for. English cotton mills have been running short time for months, and a further curtailment is proposed. Under such conditions it is safe to say that foreign manufacturers would welcome a chance to exchange unprofitable cotton mills for good American dollars.

Cotton in the Soudan. The alarm over the dependence of all other countries upon the cotton supply of the United States has spread to France, and is increased by the present scarcity, which has kept mills throughout Europe waiting for certain grades, and by the growth of American trusts. A special commission has been studying the French Soudan and recently reported that this vast region is well adapted for cotton raising. The trust spectre looms up before Europe, and the French press is urging that immediate steps be taken to make France independent of the American cotton supply, which, they fear, will in the near future be controlled by a combine that can dictate its own terms to the world.

Textile Operatives in Russia. The account of how Russia cares for the workers in her mills, given by our Moscow correspondent in another part of this issue, will come as a surprise to many in this country, in whose minds Russia is associated with harsh government, tyranny and hardship for the common people.

The writer, who is a foreigner managing a large Russian mill, shows why, in spite of low wages, Russia cannot at present and probably for an indefinite period become an exporter of textile goods. The first and chief reason given is the extra expense for schools, hospitals and lodging houses, which the Russian law requires the manufacturers to provide for their operatives.

Textile manufacturing is protected in that country by a practically prohibitory tariff, but, while assuring the home market to the home mills, the government requires that the mill owner shall provide a comfortable home for the workers, educate their children, care for them when sick, and provide for their general welfare in many other ways.

The views of a hospital, dormitory, nursery and school connected with one Russian cotton mill tell the story of how well the law is obeyed. The expense of these extra institutions becomes part of the cost of the goods, and explains why the low rate of wages paid to Russian mill work-

ers means a high labor cost of Russian goods, which prevents the Russian manufacturer from competing with English and other foreign goods made where the education and general oversight of the workers is not a direct charge on the mill treasury.

It is worthy of note that this care and education is required by law and is not the result of individual enterprise.

The Cotton Belt. The census department has issued an interesting report upon the cotton crop, based upon the statistics of cotton ginned, a new feature in government reports. It shows that less than 4 per cent. of the 1901 production was put up in round bales, the number of which is reported as 744,851, weighing 250 lbs. each, as compared with 9,132,215 square bales. Over one-quarter of the entire crop, or 2,502,166 bales, was raised in one state, Texas. This same state produced 34 per cent. of the 1900 crop, or 3,536,506 bales.

It is remarkable that no other portion of the wide world outside of the United States is capable of supplying the demand for cotton. England, Germany and France are using every effort to grow cotton in their possessions, and their past experience in this direction has been so discouraging as to make the present attempts but little less than forlorn hopes. They are made, however, because the situation is serious. European mills have lost much time during the past year waiting for cotton, and an interruption of the American supply would be nothing less than a calamity. Incidentally, it may be observed that this virtual cotton monopoly is one of the strongest guarantees of peace between this and foreign nations.

Next to Texas in cotton production, comes Georgia, with 13 8/10 per cent. of the 1901 crop, followed by Mississippi, with 13 2/10 per cent.; Alabama, 11 6/10 per cent.; Louisiana, 8 8/10 per cent.; Arkansas, 7 6/10 per cent.; South Carolina, 7 3/10 per cent. The new cotton growing sections, Indian Territory and Oklahoma, are credited with 2 6/10 and 1 4/10 per cent. respectively, nearly double their production in 1899.

English All Wool Shoddy Goods. Our English correspondent refers to the many fabrics brought out by Dewsbury manufacturers, and labeled "coronation cloths." He sends us a sample of one, shown in the illustration accompanying his letter. We have dissected the fabric, and find that there are 40 threads per inch each way. The goods are sold as 20 oz. cloths, but the sample received weighs only 16 8/10 ozs. The size of the yarn as it lies in the finished goods is 2 5/8 runs. Making due allowance for the loss of this low stock in finishing, we estimate that the yarn was spun to about 2 runs. The material is a mixture of cotton and low wool stock, the latter probably costing less per pound than the cotton. The fabric is another example of the skill possessed by English manufacturers in the conversion of cheap stock into sightly, serviceable goods.

Reciprocity. Congress having taken no action on the reciprocity treaties, they will, with one unimportant exception, that with the Dominican republic, expire by limitation before Congress meets in the fall, unless extended by mutual agreement. Such extension is not anticipated. At no time was there any hope for these treaties, the general sentiment being from the start against any reopening of the tariff question, and the early discussion of these treaties showed clearly that the reciprocity issue for all political purposes was the tariff issue with another name.

—A patent has recently been granted in this country for a method of grinding card cylinders while the card is in operation. The grinder is placed under the doffer.

IS IT WORTH WHILE?

The tenacity with which people cling to established standards of weights and measures, and the confusion resulting from the concurrent use of two standards are shown in the columns of this and last month's issues of this journal by two examples, one taken from German, the other from French practice in the textile industry at the present time.

We call attention to them as a warning against the evils that are sure to follow the introduction of the metric system into the United States. The statement is often made by advocates of this system that in Europe the change to the metric system was made without inconvenience and that in Germany it was effected in four years. The examples we have given of textile calculations in Europe at the present time, one hundred years after the introduction of metric measures, supply a conclusive answer to this claim. A large population not only will not, they cannot change their ideas of size and weight.

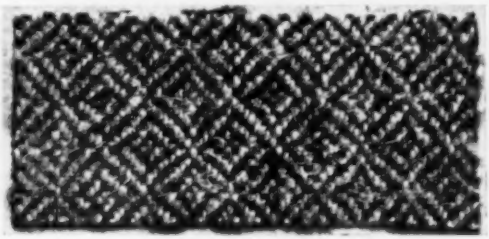


FIG. 1.

This objection is so serious as to put the question of change to any ordinary system out of the domain of practical affairs. It is asserted, however, that the metric system possesses extraordinary advantages, the chief being its decimal divisions, which more than compensate for the stupendous difficulty of making a change.

To test this claim we have taken a woolen fabric, shown at Fig. 1, and made calculations for it by both the English and metric weights and measures.

The lay-out of the cloth under examination is as follows:—

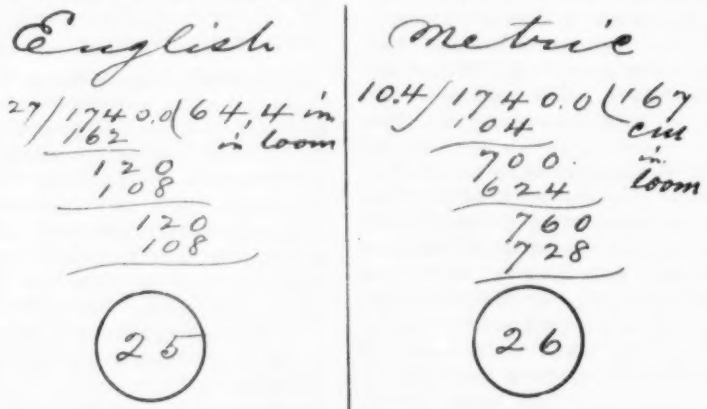


FIG. 2.—CALCULATING THE WIDTH IN THE LOOM.

ENGLISH.

1740 Ends, 2 3/4 Runs woolen warp.
9 by 3 Reed 64.4 in. wide in loom.
28 picks per inch, 2 3/4 Run.

METRIC.

1740 Ends No. 9 1/2 woolen warp.
Reed 52 (dents per decimeter) × 2 (threads per dent).

we have, therefore, made the size 2 3/4 to avoid giving the English system an unfair advantage. As it is, the metric has the advantage, as the metric fraction is 1/2 instead of 3/4.

First we will calculate the loom width (Fig. 2). In both cases the multiplication of dents and threads is

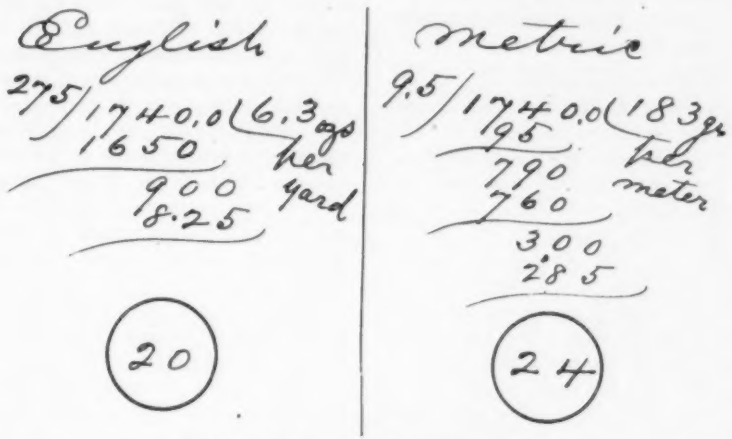


FIG. 3.—CALCULATING WEIGHT OF WARP.

167 centimeters wide in the loom; 116 picks per decimeter.

In converting the sizes from metric to English standards, we have purposely avoided the exact equivalent. Thus, metric No. 9 1/2 is very near to 3 run yarn. The whole number 3 is easily handled in the calculation and carried on mentally, as is the custom in the mill.

Result—25 figures required for the English and 26 for the metric calculation.

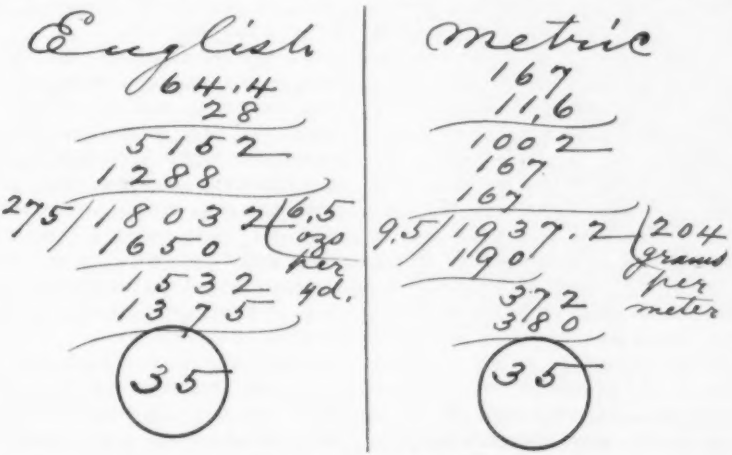


FIG. 4.—CALCULATING WEIGHT OF FILLING.

First round won by the English.

Next let us calculate the weight of the warp (Fig. 3). The calculations

for waste and take-up are omitted as they are made by percentage, and are, therefore, alike in both cases.

Result—20 figures required by the English and 24 by the metric system.

Second round won by the English.

We will now calculate the length and weight of filling yarn (Fig. 4).

Result—35 figures required by each system.

Third round—a draw.

Summing up the three calculations we find 80 figures used with the English and 85 with the metric method.

Thus, when put to these tests, the metric system proves to be more cumbersome than the one we now use.

The best mill practice employs the same methods of calculation for cotton and worsted as for woolen goods.

The facility with which calculations are made by the run system is due to the fact that the count is equal to the number of hundred yards in an ounce of the yarn. Thus, in the above ex-

2 3/4 **run yarn has 275 yards** per ounce.

To use this method of calculation for worsted or cotton, the run equivalent of the count is used and is readily obtained by multiplying the cotton count by .5 1/4 and the worsted count by .3 1/2. These are extra calculations, but they are not made for each occasion. The manufacturer soon connects the run equivalent with the cotton or worsted count, as, for example, No. 20 single or No. 40 two ply worsted is equal to 7 Run; No. 36 two ply worsted, 6 3/10 Run, etc., while No. 20 single cotton yarn is equal to 10 1/2 Run; No. 30 cotton, 15 3/4 Run, etc. These equivalents of cotton and worsted counts soon become a matter of common knowledge or are obtained by a mental calculation. Where there is frequent use of a wide range of sizes, a table gives the equivalent at a glance, but usually, the manufacturer has no need for such aid.

We ask our readers to look upon the European chaos of calculations, and say whether it is worth while to invite in this country a similar condition for an indefinite time, two hundred, five hundred or a thousand years, in order that a remote posterity may finally use the metric system exclusively, a system under which textile calculations, as we have just shown, require the use of more figures than does the system we now have. Has the present generation of men a right to lay such a burden upon their successors?

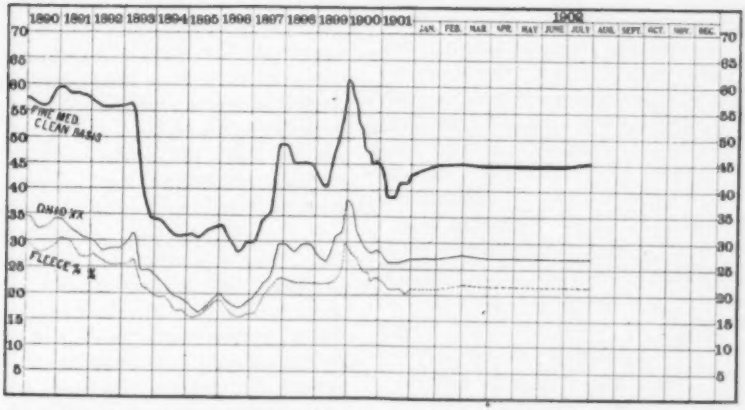
It will be well to listen to the words of John Quincy Adams, written over seventy-one years ago, and which apply with greater force at the present time, because the fifteen millions of Britons have increased to forty-one millions, and the ten millions of Americans have grown to seventy-six millions:—

"If this report were authorized to speak to both nations, Great Britain and the United States, as it is required to speak to the legislature of one of them, on a subject in which the object of pursuit is the same for both, and the interest in it common to both, it would say—Is your object uniformity? Then, before you change any part of your system, such as it is, compare the uniformity that you must lose, with the uniformity that you may gain, by the alteration.

"At this hour, fifteen millions of Britons, who, in the next generation, may be twenty, and ten millions of Americans, who, in less time, will be as many, have the same legal system of weights and measures. Their mile, acre, yard, foot, and inch—their bushel of wheat, their gallon of beer, and their gallon of wine, their pound avoirdupois, and the pound troy, their cord of wood, and their ton of shipping, are the same.

"They are of the nations of the earth, the two, who have with each other the most of that intercourse which requires the constant use of weights and measures. Any change whatever in the system of the one, which would not be adopted by the other, would destroy all this existing uniformity.

THE WOOL MARKET.



Wool is selling freely and at a slight advance in price. The mills have purchased in anticipation of their requirements for light weights, and the new wool has changed hands at an advance from the cost, which, as our readers know, was above the eastern quotations. The woolen and worsted mills that are not crippled by strikes are doing a good business, and many mill owners have been encouraged to make purchases of wool by seeing balances on the right side of their ledgers.

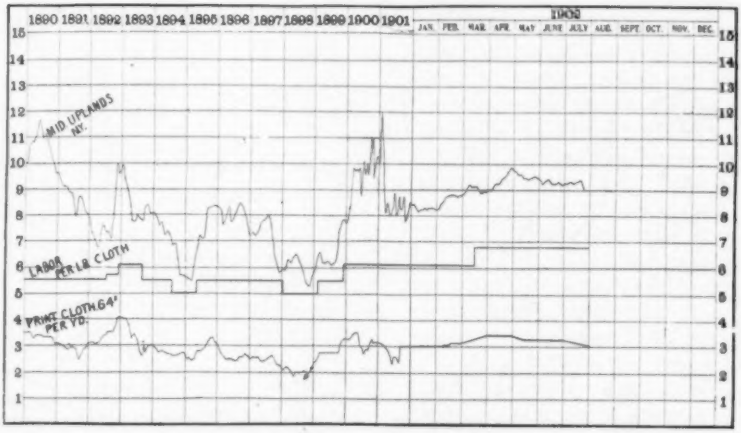
At this writing the full line of light weights has not yet been opened. The cheaper grades only have been offered to the trade, and the prices remain practically the same as last year. These, however, are the woolen goods made largely from wool substitutes, and would not be affected by changes in the cost of wool to the same extent as fabrics made from new wool stock.

The reduced consumption of wool by the large worsted mills that have been involved in a strike of its operatives for the past six months, has softened the market for Australian and other worsted wools, the clothing wools occupying a decidedly stronger position. Any further advance in wool prices will be accompanied by an increased use of cotton and shoddy, with which to restore the equilibrium. That this fact is generally recognized in the trade is shown by the absence of speculation at the present level.

—The Board of General Appraisers have decided that certain woven fabrics of silk having two or more colors in the filling within the provisions of paragraph 391, and that the modifying phrase "or printed," where first used in paragraph 387 of said act, and without further qualifying words, includes woven fabrics of silk in whatsoever manner the printing is done, whether upon warp alone and before the introduction of and not upon the filling threads or yarns, or otherwise. Another decision of this Board makes braids, etc., composed of cotton and other vegetable fibre, and other materials, including such as are known as "Battenberg braids," "crown braids," "featherstitch braids," "feather-edge braids," "guipure lace braids," "herringbone braids," "honiton braids," "linen bobbins," "novelty braids," "renaissance braids," "rick-rack braids," "star braids," "wave braids," and by various other names, are dutiable at 60 per cent. ad valorem.

—In the article which appeared on page 912 of the May issue, describing a leno selvage motion, we omitted to state that the device has recently been patented in this country by H. H. Sutcliffe, Frankford, Philadelphia, Pa.

THE COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
MID UPLANDS N.Y.
LARGE PER LB. CLOTH
PRINT CLOTH 64" PER YD.

The decline in the price of cotton during the latter part of July, which is shown by our chart, was due to speculative influences in the New York market. The new crop is progressing well, but may be greatly affected by the weather conditions during the present month. In spite of the late decline, the price of cotton is still high, viewed either at home or abroad in its relation to the selling price of manufactured goods. The high quotations have been maintained not only by the admittedly strong statistical position of the staple, but also by the phenomenally liberal buying of Lancashire. English mills may be idle and English cotton goods may be selling at a loss or not at all, yet the spot business in England continues large. One authority expresses the opinion that this apparently anomalous condition is due to the small size of the visible stock throughout Europe, that the trade is still under the influence of the fame of two years ago, that English spinners have given large and long contracts for the delivery of yarn and cloth without having covered the orders with raw material. This theory is plausible, but whether true or not, the cotton hunger abroad has been a source of much profit to America. The Chronicle estimates the world's visible supply on June 26th at 1,911,570 bales, as compared with 2,306,521 bales same date in 1901, 1,405,722 bales in 1900 and 3,144,925 bales in 1899.

The market for Egyptian has advanced steadily under the influence of light stocks and a steady demand.

Wages of Upholstery Weavers. The strike of the upholstery weavers in Philadelphia last month ended in the weavers securing an advance, varying from 5 to 10 per cent. Fully 95 per cent. of all the upholstery weaving in the United States is done in Philadelphia. Following is the new price list now in force:

2 1/10 mills per pick for one shuttle under 4000 ends.
2 1/4 mills per pick for cotton and silkoline, one or two shuttles, 4000 ends and over.
2 3/8 mills per pick for silk and silkoline damask. This includes brocatelle and shaft lash.
1 cent per yard for each shuttle over two.
1 cent per yard for each beam over two.
1 cent per yard for each eight changes.
1 cent per curtain for pulling fringe.
2 cents per curtain for tying cards.
23 cents per hour for day work.
10 cents an hour extra for overtime work.
For 54 inches to 64 inches, 1 1/16 of price.
For 65 inches to 74 inches, 1 1/8 of price.
For 75 inches to 84 inches, 1 3/16 of price.
For 100 inches, 1 3/8 of price.
30 days' notice of change to be given by either side.

—Handle the great as you would fire; do not get too near, nor too far away.—Diogenes.

Seasonable Fabrics.

Men's Wear Woolens. In the men's wear woolen and worsted goods division of the market, the new lines which have been opened up for spring are confined almost altogether to lines of medium and low grade goods, such as serges, crashes, etc. None of the prominent lines of fancy worsteds are, as yet, opened up, and the American Woolen Company has not yet announced their prices, consequently little can be said of the basis on which the early business will be done. The lines of low grade goods already opened are practically at last season's prices, although the general opinion seems to be that fancy worsteds will be advanced at least 5 to 7 1/2c. per yard over last season's prices. This opinion is based on the fact that worsted yarns are considerably higher than a year ago.

In figure No. 1 we illustrate a style of fancy worsted trouserings from the advanced line of the Edwards Worsted Mills. This line is not yet opened up, but it is expected that the line of trouserings from which these samples were selected will open at from $1.52 1/2 to $1.55, but as already stated, the price situation is still unsettled and it is possible that the price of this line may vary slightly from the figures quoted.

Crashes will undoubtedly occupy a prominent place in the business of the coming season and such lines as are being shown are quoted at practically last season's prices. From blankets of various lines which the writer has been permitted to see, it would seem that hard finished goods will predominate, and in the way of colors, a great many medium and light greys seem to be shown in the lines.

Re-orders for heavy weight goods are being received only on a moderate scale and the demand is being easily met. Fancy worsteds are in fairly good demand and the market still holds firm on kerseys and overcoatings.

At the present writing new lines of men's wear woolens are being constantly opened up. So far as the lower grades of goods are concerned, practically every line of any importance is already on sale. This is particularly true with reference to the lines of cotton worsteds and also the cheaper qualities of cassimeres, crashes, etc.

The American Woolen Co. opened their lines of staples July 28. Following are the opening quotations for the fall of 1902 and spring of 1903, together with the prices of the same lines for the spring of 1902:

Clay Worsteds (Standard).

	Spring 1903.	Fall 1902.	Spring 1902.
11 oz.....	$1.00	$ .97½	$ .92½
12 oz.....	1.02½	1.00	.95
14 oz.....	1.12½	1.10	1.05
16 oz.....	1.22½	1.20	1.15
18 oz.....	1.35	1.30	1.25
20 oz.....	1.47½	1.42½	1.37½

Clays (Second Quality).

	Spring 1903.	Fall 1902.	Spring 1902.
11 oz.....	$ .80	$ .80	$ .77½
12 oz.....	.82½	.82½	.80
14 oz.....	.95	.92½	.87½
16 oz.....	1.02½	1.00	.97½
18 oz.....	1.12½	1.10	1.07½
20 oz.....	Not made.		

French Backs (Standard).

	Spring 1903.	Fall 1902.	Spring 1902.
11 oz.....	$1.35	$1.30	$1.25
16 oz.....	1.45	1.40	1.35
18 oz.....	1.55	1.50	1.45

French Backs (Second Quality).

	Spring 1903.	Fall 1902.	Spring 1902.
14 oz.....	$1.25	$1.17½	$1.15
16 oz.....	1.37½	1.30	1.25
18 oz.....	1.50	1.42½	1.35

Clay Mixtures (Standard).

	Spring 1903.	Fall 1902.	Spring 1902.
10 oz.....	$1.05	....	$ .95
12 oz.....	1.15	....	1.05
14 oz.....	1.27½	....	1.15
16 oz.....	1.40	....	Not made.
18 oz.....	1.52½	Not made.	

Clay Mixtures (Second Grade).

	Spring 1903.	Fall 1902.	Spring 1902.
10 oz.....	$ .87½	....	$ .82½
12 oz.....	.95	....	.90
14 oz.....	1.05	....	.97½
16 oz.....	1.17½	....	1.17½
18 oz.....	1.27½	....	Not made

Cheviots.

	Spring 1903.	Spring 1902.
A 252.....	$ .80	$ .75
A 287.....	.70	.65
A 312-17.....	.72½	.70
A 312-32.....	.65	.62½

Serges.

	Spring 1903.	Spring 1902.
A 305.....	$1.00	$ .95
A 410-1.....	.72½	.70
A 411-1.....	.77½	.75
A 411-5.....	.75	.72½
A 545.....	.92½	.90
A 666.....	1.17½	1.12½
A 712-3.....	.90	.85
A 6700.....	.85	.80
D 3192.....	1.05	.97½

From the foregoing quotations it will be seen that the advances are from 2½ to 7½ and 10 cents throughout the line.

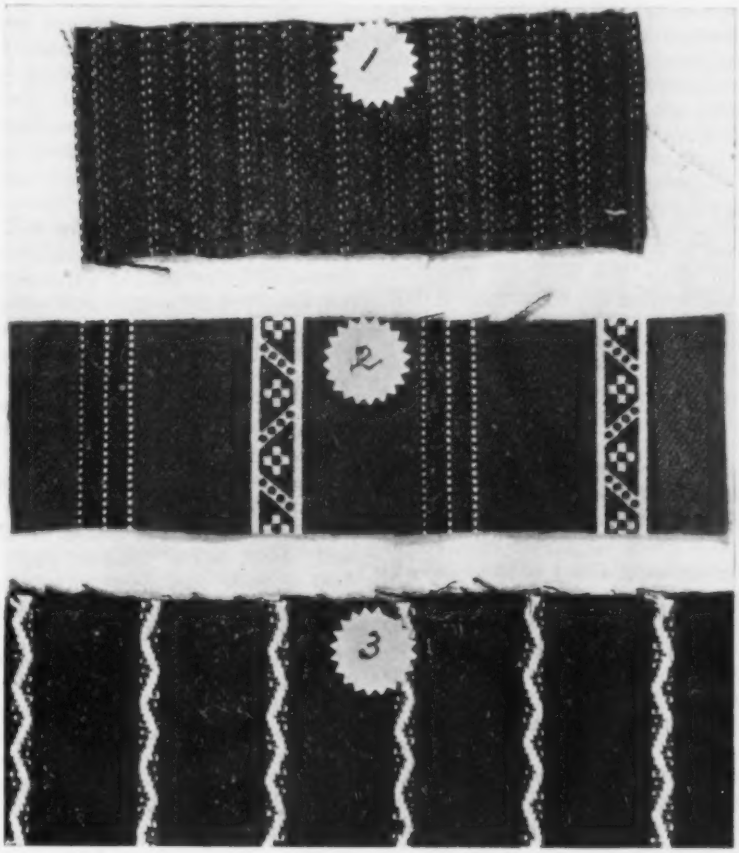
Silks. Now that the strike of the silk dyers' helpers of Paterson has been practically ended, active operations have again been resumed and the fact that confidence has been restored is evidenced by the number of duplicate orders that are coming in from all parts of the country. There is undoubtedly a shortage of supplies of desirable goods in the silk market, more particularly in the wider widths of black taffetas and the fact that the mills are again in operation does not mean that deliveries can be commenced at once, for it will be several weeks before orders will be caught up with and stock goods begin to accumulate. While the strike lasted, many buyers, not knowing how long the tied-up situation was likely to exist, devoted considerable attention to silks of foreign manufacture, with the result that there was a noticeable activity among importers of silks and considerable quantities of piece goods were imported to meet the emergency. While it is true that the strike was the cause of the lessening of sales to a considerable extent during the past few months, we are firmly of the opinion that the direct result will be of benefit to the market. Stocks of what otherwise would have been naturally slow moving merchandise, were cleaned up in good shape, with the result that manufacturers will be in a position to get better prices in the future than if the strikers had not held out for so long a time.

For the fall season, moired effects, which were so popular last spring, will undoubtedly continue to be a strong feature of the trade, and plain and colored taffetas will also continue good. While little attention is being paid to fancies there is every indication that large quantities of plain goods will be used for the lining of garments and costumes and also for full outer garments of silk which are likely to be extremely popular. But, although fancies, as a rule, are looked upon with scant favor, there are indications that tartan plaids will return to favor, and some of the domestic manufacturers, acting upon advices from the French market, are getting out a few numbers in novelties of this class.

Little can be said, as yet, as to the tendency of styles for spring, although it is expected that goods on the Crepe de Chene order will be in demand and also striped moire effects. Black and white checks will also be considered safe property for spring, but foulards have had a black eye this season and should be touched with extreme caution.

Linings. In this division of the market prices have been fairly well maintained with no quotable changes in any direction, but the demand is for limited quantities only. Quotations on kid finished cambrics remain unchanged, with some indications of

a slight weakening in some quarters. Fairly large orders for silesias and mercerized fabrics such as are used for facings, bands, etc., have been received from the knit goods trade, but the business from this quarter is naturally of limited proportions. The skirt manufacturing trade is also using a fair quantity of mercerized fabrics and fine sateens, but the demand from the clothing trade in general has been very moderate. Prices on cotton twills, Alberts, etc., remain unchanged, with about the usual amount of orders for this season of year.



White Goods. The white goods market is in excellent shape and the unanimous opinion seems to be that the present season has been an extremely satisfactory one. Stocks are in a well-sold-up condition, with a fair demand still coming forward for the higher grade goods, such as fine count Persian lawns, dotted Swisses and fine mercerized fancies. It is also expected that there will be a larger business than usual on heavy weight white goods for the fall trade; such goods as can be utilized by the cutting-up trade for ladies' waists.

Had the present season been more favorable, so far as the weather was concerned, the white goods season would have undoubtedly been a record-breaker, and already considerable attention is being devoted to lines for the season of 1903 and large

orders have been placed not only on novelties, but also on staple India linens, Persian lawns, cheviots, etc.

Cotton Dress Goods. Although the weather conditions have not been particularly conducive to good business on wash dress goods, the results have not been altogether unsatisfactory. Stocks in the hands of jobbers are not large and prices are being well maintained. On prints and ginghams, the market is quite firm, and there is little indication that any changes in quotations will be made in the near future. Ginghams are particularly firm, and the demand cannot be readily met, many agents being still behind on their deliveries.

Very little has, as yet, been done, on novelty dress goods for the spring of 1903 and lines are still in a very incomplete condition. For fall delivery a large business is being done on goods of the napped order commonly known as cotton flannels and the competition among manufacturers and agents has been so keen on this class of goods that considerable price-cutting has resulted. Figs. 2 and 3 show new styles of the Beaver Mills flannel which the Arnold Print Works have recently added to their already extensive range of patterns which they are showing in this line. This cloth, as was noted in a recent issue, has been extremely successful, and is sold to the Jobbing Trade at 9c., 28 inch width. Another heavy weight cloth on the canvas order with heavy woven stripes in a variety of tasteful color combinations has been placed on the market by John Farnum & Co. of Philadelphia and New York, and is shown at Fig. 3. This cloth is the product of the Berkshire Mfg. Co., Frankford, Pa., and has been a good seller at 15c., 27 inches wide.

—No one can be happy who is without self-respect.—Lecomte.

—The good we do today is the happiness of tomorrow.—Le Bailly.

The Knit Goods Situation.

Very little progress has been made since our last writing, so far as the spring underwear business is concerned, for, although the majority of the lines are now in fairly complete shape, buyers do not seem to be in any great hurry to place their orders. The greater part of such business as has already been booked has come through Western salesmen, who have been out for the past few weeks, but orders of any magnitude have been few and far between, buyers, apparently, preferring to wait until they come to the eastern markets to place the bulk of their orders.

In a good many cases agents are inclined to refrain from naming prices except upon request, as there is always the possibility that lines coming out later will cut under the early prices, although, according to the prices which have been already quoted, it would seem as though no sane manufacturer would attempt to go lower.

Mercerized effects of various descriptions will undoubtedly be a strong feature of the coming season, and while many fancies will be shown, little has been brought to light as yet that is very different from the lines of past seasons.

The demand for goods for spot delivery has been very satisfactory, and stocks in the hands of both jobbers and retailers are in extremely satisfactory shape. Ladies' ribbed goods of every description have been unusually well cleaned up, but on men's balbriggans, the situation is not quite so satisfactory, and fair-sized stocks of these goods are still being offered in the market, but it is altogether likely that a few weeks of continuous hot weather will quickly remedy this state of affairs.

The market still continues firm on fleeces and heavy weight ribbed goods, and there is little likelihood that any lower prices will be made, as a generally sold-out condition

seems to exist. On wool goods the situation is not quite so satisfactory, and prices are consequently not so firm, although no great weakness is anywhere in evidence.

With the present situation on fleeces as an object lesson, it is to be hoped that manufacturers and selling agents, as well as jobbers, will refrain from the senseless cutting and slashing of prices on fleeced goods, when the coming season opens up. There is absolutely no excuse for the foolish and unprofitable competition of the past few seasons for which the jobber has been, perhaps, as much to blame as anyone else.

The hosiery situation is also little changed since our last writing, although some progress is being made with spring lines. Full-fashioned lace goods and high grade fancies are in good shape, and the greater part of the business on these lines for the spring season has already been consummated, but little attention has, as yet, been devoted to lines of staple goods.

Every preparation is being made for an immense season on lace hosiery of every description, and there is nothing in sight that would seem to be detrimental to the success of these lines. There is just a remote possibility that the lace hose business may be overdone to such an extent that stocks may accumulate, in which case prices would, of course, go to pieces.

The Chemnitz market still remains practically unchanged, with high prices ruling and little in the way of desirable goods to be procured from stock. Lace goods are, of course, in the greatest demand, and some trouble is experienced in getting the workmen to make the more intricate patterns, as they prefer to work on the more simple ones, which require less time and skill to execute.

In color combinations, black and white seems still to have the lead, particularly in the higher grade goods. Infants' lace socks have been in went into force, while his neighbors strong demand, both in cotton and lisle, as well as in silk.

The Latest Designs in Foreign Woolens and Worsteds.

Le Moniteur des Echantillons, the foreign sample journal for which we are agents, began a new season with this present month. New subscriptions will include all numbers from July. The journal is issued every two weeks, and during each season of six months supplies 400 samples of the latest woolen and worsted fabrics, both plain and fancy, on the European market.

Complete weaving directions are given with each sample; these include ends, picks, size of yarn, quality of stock, width in the loom and weave draft. A subscription to this sample journal places a mill, no matter how remote from the market, in close touch with the foreign markets. The price of subscription per season of six months is $11.00.

New Fabrics from Yorkshire.

BY S. B. H.

Coronation cloths are all the rage in the English market at the present time. Many of the special fabrics to which this name is applied have been produced by Dewsbury or Batley manufacturers, who are such adepts in the manipulation of shoddy and cotton.

Previous to the present American tariff, and especially during the time that the Wilson bill was in force, all the mills in Batley and Dewsbury were steadily employed, while nine out of ten of them were running nights; on Friday, the men worked all night and up to one o'clock Saturday.

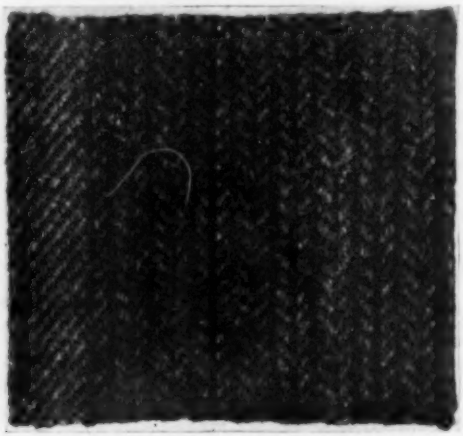
The Dingley tariff was a great blow to the Batley manufacturers and one from which they have not yet wholly recovered; there is at least one notable exception to this rule, this manufacturer having kept his four mills fully employed since the Dingley bill

were running slack. The bulk of his production is sold at from 36 to 60 cents per 6/4 yard. Seventy-five per cent. of his goods are woven with a four leaf twill, and their popularity is due not only to the perfection which their machinery and processes have attained, but to the mixing of colors and designing of patterns.

Batley manufacturers are continually bringing out new shades and colors, and the operations of the blender in the "willey house" or picking room is as important a factor as the work of the designer. Experiments with new shades and mixtures never cease in the dyeing and blending departments, and a man who works in a successful Dewsbury mill told me of the vast number of shades that are used, and the great expense incurred in getting up new color effects.

The sample shown in the illustration was placed in my hands the other day, and will, doubtless, interest a great many American readers. The sample in question was a coronation fabric. This name is applied to a large number of the cloths that are offered to the British public at the present time, and are largely made with red, crimson and blue stripes on a dark ground. In the pattern before us, the four-leaf twill is broken up to produce the herring bone effect. Nearly all the twills used in England today for suitings, trouserings and overcoatings are herring bones. In the pattern before us, three gray threads are used and give the cloth a very smart appearance. It sells for 50 cents per yard, 55 inches wide, and weighs 17 ounces. Following is the warp pattern:

3 gray, 2 black, 3 gray, 2 black, 3 gray, 2 black, 3 gray, 1 black, 1 fancy twist.



CORONATION CLOTH.

The filling is all black.

The fancy filling in the warp is made by twisting a blue with a black cotton thread.

Cotton in India.

Speaking of the lax methods prevailing in the cultivation of cotton in India, the Indian Textile Journal says: "We are approaching a time when the demand for the better qualities of cotton will become urgent in our mills, and it will be accompanied by a fall in the sales of coarse yarn. This has been foreseen by many of our manufacturers, but they will neither enter into schemes of cotton cultivation themselves, nor will they

endeavor to persuade others to undertake it. There is no intercourse between the grower and the consumer. The merchant who collects the crops will advance such moneys as will secure the crop to him, but into the details of practical agriculture he will not enter. As we have frequently repeated, the best of all aid that intelligence and capital can supply are brought to bear on cotton cultivation in America and in Egypt, and we may expect ere long to have the same account from the cotton fields of Asiatic Russia. The Indian system of farming remains the same as it was before railways were introduced, and good roads with public security encouraged the transport of produce to remote markets. The ground is cultivated in patches so small as to preclude the use of any but the most primitive implements, and in spite of the very low wage of an Indian ryot, grain can be raised more cheaply, per bushel, in the United States than in India."

Textile Calculations in France.

For over one hundred and twelve years the metric system has been a national idol in France, where it originated. There it has been maintained by national pride and forced upon the people by all the power of an autocratic government.

In spite of this the textile industry of France is still burdened by the use of old standards of weights and measures, which antedate the first revolution. The existing confusion cannot be better shown than by extracts from a standard French work on textile manufacturing, Traite theorique et pratique de tissage, by Paul Lamoitier. Referring to standards for woolen and worsted yarn, this writer says:—

In certain parts of France and Germany, as well as in England, the old yarn standards are retained. For worsted yarn, we have the following units of length and weight for yarn counts:

Roubaix-length, 714 meters weight 1/2 kilo.
Fournies-length, 710 meters weight 1 kilo.
Reims-length, 700 meters weight 1 kilo.
Germany-length, 1,577 meters weight 1 kilo
England-length, 560 yards weight 1 lb.
Metric-length, 1,000 meters weight 1 kilo.

For carded yarn the old methods of numbering are still in use, although the official metric system is used in the districts of the North and of Reims.

At Sedan the counts are based on units of 1,500 meters and 1 kilo.

At Elboeuf the length is 3,600 meters and the unit of weight is the pound. This pound is divided into quarters, and each quarter into 10 parts (called sons).

We shall, further on, study the counts of silk, cotton, linen, etc. We regret extremely these anomalies, which obstruct business, lead to serious errors and complicate all calculations.

Then follow several pages of algebraical formulas and comparative yarn tables for resolving the different systems into the metric.

A curious state of affairs exists in the cotton industry. Instead of the regular metric system of yarn numbering, the French use a system based on 1,000 meters as a unit of length, and the French pound (1/2 kilo) as a unit of weight. The English is the other system in use for cotton yarn, and the author occupies several pages with formulas, tables and rules by which to convert the English system into the French, and vice versa.

Next come counts for linen, hemp and jute. We will let Lamoitier state what French practice in these industries is at the present time:—

The English system is used. The lea is 300 yards or 274.2 meters; 12 leas make a skein of 3,600 yards; 100 skeins, a bundle of 360,000 yards.

All this is in France where the metric system is supposed to be exclusively used. Lamoitier's explanation of how to reduce the English linen counts to the metric system is worth repeating here, as showing the confusion resulting from the attempt to supplant English yarn counts by the metric system:—

Yarn is designated No. 1 when a lea weighs 453 grams or 1 English pound (274 m. 20 per 453 grams). No. 2 yarn measures 274 m. 20 per (453 grams ÷ 2). No. 3 yarn measures 274 m. 20 per (453 grams ÷ 3).

If we wish to convert English into French counts with the unit of weight the French pound of 500 grams, we will have for No. 1 yarn a formula as follows: $(274.2 \times 500) \div 453 = 302$ m. 60.

By the official (regular metric) standard, English No. 1 corresponds to .605 or 605 meters per kilo. French No. 1 corresponds to English 3.30.

One more illustration. When the French weaver reckons the picks in a piece of cloth, does he use decimeters and centimeters?

As if to show his utter disregard, if not contempt for decimals, he splits the meter into thirty-seven parts, called inches (pouces). Not satisfied with this desecration, he divides the inch into quarters, and reckons the filling texture by the number of picks per quarter inch. This is what Lamoitier says:—

> The filling is ordinarily reckoned arbitrarily by the quarter inch, and it is necessary before the calculation of a fabric to convert the picks per quarter inch into picks per centimeter. There are 148 quarters of an inch in a meter; 1 cm. is equal to 1.48 quarter inches, 5 picks per quarter inch is equal to 7 4/10 picks per centimeter.

All this is simplicity with a vengeance. Well may the textile manufacturers of America pray to be delivered from it. The metric theory may be all right, but this is the practice.

Textiles at the Louisiana Purchase Exposition.

The prominence given to the textile industry at the exposition to be held at St. Louis in 1904 is plainly shown by the accompanying illustration of the textiles building. Textile manufacturing leads all other industries according to the 1900 census, both in the value of the product and the amount paid for wages, and it is gratifying to have the exposition managers appreciate the importance of the industry by devoting a special building to the exhibition of textile machines, processes, materials and products. The structure, which is of Corinthian design, is to be 525 by 758 feet in extent, and is located upon the main avenue of the grounds. The estimated cost is $375,000.

THE TEXTILES BUILDING, ST. LOUIS EXPOSITION.

The Trials of a Young Superintendent.

BY BEN SHAW.

And right here let me say, there is a fortune awaiting the man who will invent an oil can which will positively refuse to be turned upside down and worked in that position for an indefinite period.

I have seen a fly-frame tender start to oil the spindles, tip the can bottom upwards and walk the entire length of the frame with it in that position. Of course I suppose that some oil must have gone onto the spindles by accident, but the effect of the great bulk of it is felt by the mill in the shape of oily waste.

One of the longest and most difficult hunts I ever had was in looking for the cause of cut sliver. We were using fluted drawing rolls with pitch collars at either end. These collars had worn down and allowed the flutes to "bottom." This is a very difficult thing to detect, and is probably as often overlooked as any "out" about the mill. See Fig. 5.

On entering the card room one morning, I ran onto our friend Dan

"reading the riot act" to a speeder hand, a Pole, who probably could not understand one word Dan was saying, but by the hopeless and terror-stricken expression on her face, it was evident that his actions spoke volumes.

On my inquiry as to the cause of his disturbed state of mind, he replied:

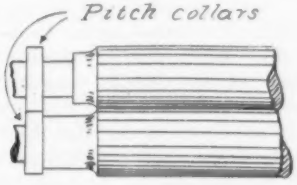


Fig. 5.

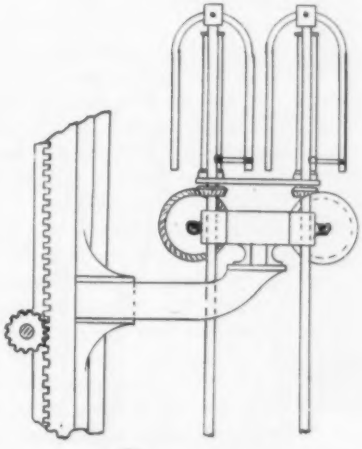


Fig. 6.

"That blankety-blank girl and all her kind are enough to make a man strike his mother-in-law."

"What has she done?"

"It's what she hain't done. When things go wrong she won't use no sense. There's an iron bar that fell in some way against the cone belt and wouldn't let it move along, but just slowed down the machine. And when she found it slowing down, she just gives five or six turns to the wind-up motion, and starts the thing going again."

I didn't blame him for being worked up, for, of course, starting the cone belt back at the beginning, with a set already half full, gives an enormous tension to the roving during the last half of the set. As she was on coarse work, this may have happened to several sets. This incident would probably not be an everyday occurrence, but it goes to help make up the day's trials.

Very often, unless a sharp watch is kept, the tender, in piecing up roving, will allow the new end to go into the trumpet, and will neglect to break off the old end, thus making twelve or eighteen inches of double roving, with a draft of four, and with three or four processes still to come, each with a draft of four, it is easy to see that several yards of coarse yarn would be the natural result.

I found an order on my desk one day for a large number of fly-frame driving pulleys to be three and one-half inch face. I was puzzled. I had never heard of anything like this before, so I decided to investigate.

"Dan," I said, "what in the world are you going to do with those driving pulleys?"

"Goin' to put them on the frames if I get them."

"But what is the matter with the pulleys already on the frames?"

"Ain't wide enough. I can't drive them up to speed."

"Why don't you take them up if they slip? That ought to do the business," I suggested.

"Do the business? Confound it, I have took them up and took them up until they won't come up no more, and it's either pull up the floor or bust the belt. Them belts ain't heavy enough to drive my frames anyway, and never was."

Holy smoke! Here was something new, that a two-inch belt wouldn't drive the ordinary fly-frame. Investigation showed that while he had not

"busted" the belts, nor did the floor show any signs of starting, yet the shafting was deflected, and the frames were not up to speed, and the horsepower disappearing here must be something enormous. Evidently "Something was rotten in the State of Denmark."

"I think you'd better overhaul these machines, Dan. Something is wrong about them."

A gang of shop hands was put on to take down a few frames at a time. I waited to see the start made. Walker would put in an appearance occasionally, and I could see by the expression on his face that he wanted to tell me I was "off my trolley" this time, but he said nothing. Dan was a great man to chew tobacco, and I had noticed that the more excited he became, the faster he chewed. I think he broke his record that day, for I saw him borrow a chew of his roving boy, and that was something remarkable for Dan. The oldest employee had never known him to be "out."

When the men reached the bolsters they stopped with one accord.

"You're not tired, are you, boys?" I ventured to remark.

"No," one of them replied, "but we've got to have a safe-blowing kit to get these bolsters off."

And sure enough they needed it. The bolsters were so badly gummed up that they did have a "hot time" removing them. Here was the cause of the drag of the frame. Nearly every spindle was bound by the foreign matter and dried up grease that had lodged in the bolster. It was no wonder the frames wouldn't keep up to speed. The surprise was that they had run at all.

Walker came down to the office a few hours later and appeared to be looking for something.

"What is it, Dan?" I asked.

"I was just looking for that order I brought out this morning. I guess I don't want them pulleys. I'll make the old ones go for a while longer. But say, I wish you could see that frame buzz. I bet you could run it with a one-inch belt."

And I think he was right. Nobody in the room could remember when the machines were cleaned last. Personally, I thought it must have been before they left the builders.

This overhauling incidentally set other wrongs right. The lifting racks are very commonly overlooked in cleaning the frame, owing to the fact of their being partially hidden from view. If not cleaned regularly, the teeth become filled with lint and dirt, until finally the lifting rack gear fails to get into mesh. The result is the rail traverse takes a longer time in rising, causing the roving to pile upon the bobbin.

Then, when the reverse of the rail comes, the rack gear cannot fully control the drop, and the rail descends faster than it should, spreading the lay of the roving, and making a poor bobbin. In the general cleaning up we profited in this matter, as I found out afterwards that the traverse had bothered for some time in this way. Fig. 6 will illustrate this point.

Occasionally trouble may arise from the piling up of roving on the bobbin at the top or bottom of the traverse. This is caused by the rail balance weights being too nearly equal to the weight of the rail. The weights should be quite a little heavier or lighter than the rail in order to keep the lifting gear teeth constantly in contact either with the upper or the under side of the rack teeth, and so overcome any dwell at either end of the traverse.

This trouble might also be brought about by the rack arms binding in their slides, or by the back-lash of the gears, but these are not of so frequent occurrence as incorrect weighting of the rail.

I have found out by bitter experience that the tension of roving between the front roll and flyer nose being correct does not signify that the tension when it is wound on the

bobbin is equally correct. I have found cases where the girl tender will put an extra turn around the presser finger of the flyer, in spite of repeated warnings.

(To be continued.)

Picking and Carding.

IV.

BY SAM DRIVER.

(Continued from June.)

(Copyright, 1902, Guild & Lord.)

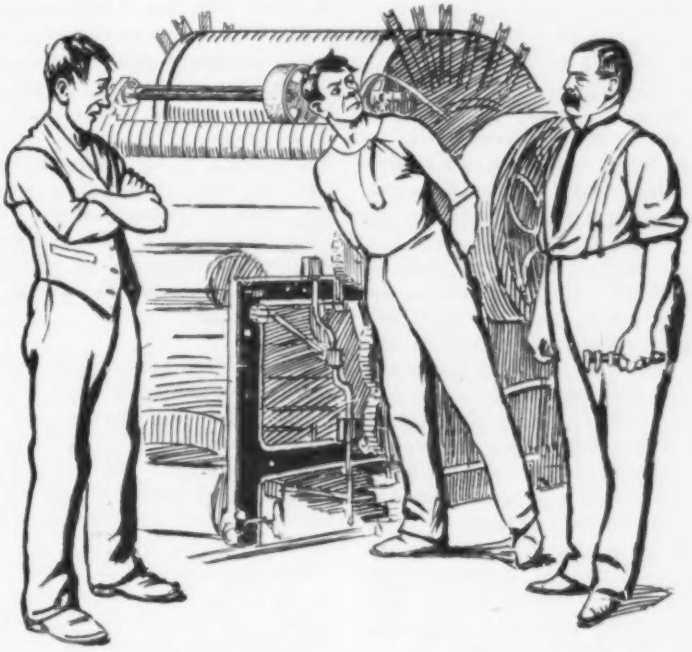
Bob is getting along first rate. Why? Because he does just what he is told, and he is willing to learn. He is not stuck up, nor does he think he knows it all, like some boss picker men I have come across. You would think some of them owned the mill, and nobody knew anything about a picker room besides themselves. Thinks he is quite a fop with a brass chain hanging from a dollar watch, because he is boss picker. Such men are no more fit to be boss pickers than ducks are to carry umbrellas when it rains. Picker rooms run with such men have been the cause of many a good carder getting fired. Quite a difference between Bob and this man!

Not long ago, I went into a picker room, and the boss picker was one of the wrong kind of bosses. I asked him what he used on the stock. He said:—

"Some kind of juice, I call it, made of Irish moss, soft soap, pearlash and gum arabic."

"How much juice do you put on to 100 pounds of stock?"

"I don't know; we use a Spencer oiler, and I just fill her up and let her go."



"What kind of a burr picker have you?"

"I don't know; some kind of an old thing about 100 years old. It's in the back room yonder; you can go and see it, if you want to."

So I went to see it, and found it to be a Parkhurst burr picker, and not very old. I found out it had not been run for some time.

Why?

Because the teeth were as smooth as glass both ways. They had been grinding it with an old fire brick. The burr picker not running, the burrs, and there were many of them, all went through the cards, crushing down the wire on cylinder, doffer and workers. They lack wisdom in such picker rooms.

They had ground the teeth the wrong way. When sharpening a burr cylinder the teeth should always point towards you; grinding the points from you is apt to turn the points down so they will not take hold of the stock. The cylinder will have to be turned in a lathe before it can be used, as the points are turned under so that, when you put your hand on it you cannot feel any points.

I soon made a change here, and took some of the importance out of the boss picker, by showing him he did not know it all. He had to pick and oil the batches the way I wanted, or my name was John Walker.

They were in a fix in this mill.

Why? Because they were trying to make cotton warp casket cloths, using very low stock. Very short fine shoddy or mungo, 95 per cent. mungo, 5 per cent. wool, 1¼ to 1½ run filling. There was the trouble; they were putting on just the same quantity of slush as they did on these 50 per cent. shoddy goods, and they did not know how many quarts of slush were put on to the 100 lbs. It might be 15 or 20 quarts for anything they knew. They could not get it through the cards. The cylinders would want stripping every two hours. They were stuck. The yarn was nubby.

This is the way to blend, oil and pick a 100-lb. batch made with 95 per cent. mungo, 5 per cent. second quality Ohio fleece wool:—

We will first take the 50 lbs. of wool after it has been run through the burr picker, and lay it down in five small layers, using one quart of oil and two quarts of clear water to each layer; olive oil is the best. Then run it through the mixing picker once. The shoddy must be run through a wool duster, or mixing picker, before commencing to blend. We will make 10 layers of shoddy and 10 layers of wool, with 10 quarts more of clear oil, no water.

If one quart of oil is not enough on shoddy, use two quarts, or even three, but use water only on wool.

We will commence by laying down a thin layer of shoddy, putting on one quart of oil, beating the oil well in the shoddy with a pole, before putting on the next layer of wool; next a layer of wool, and so on until the batch is all laid down. Then through the mixing picker. The stock must be taken from top to bottom, fed on light and well shaken up in the gauze room. If done in proper shape, twice through the picker will be sufficient.

Now you have a shoddy batch that is fit to go to the cards; one that should not gum the cards; if it does gum the cards, then you will know the fault is in the shoddy. For a batch like this, the first and second breakers would have to be hitched together, with a blamire feed on the second breaker.

Why?

Because this batch would be too short to run any other way.

The above will answer with the same proportions for 75, 50 or 25 per cent. of shoddy. Burr picker and mixing picker should always be fed light to ensure good work and save the staple of the wool.

How the stock will sometimes cling to the throat of the burr picker and ceiling and walls of the gauze room!

What makes it cling so?

Electricity.

This shows that there was electricity in the picker room before the stock got to the card room. After the same stock has had the oil and water put on and run through the mixing picker it does not cling to walls and ceiling in the gauze room. I will make the statement again, that clear cold water, the colder the better, put on the stock alternately along with the

oil, is the best cure I have found for electricity in the card room.

Bob is getting some system in running a picker room now, feeding on light, keeping the screens under pickers clean, and not letting the screens get filled up with dirt and shives before cleaning them out. I told Bob to keep on just as he was doing, unless he got some new batch he had never had before, and then to let me know.

I then went back to the card room and found the superintendent looking for me.

"Well, Sam," he said, "how are things going?"

"Very well; I don't hear any bad reports."

"Neither do I," he said.

I told him to look out, for it might make some difference in the weight of the goods by using clear water instead of slush. He said he had not heard of any difference and did not think there would be any. He then told me that in a few days he was going to get up a mixture of stock different from anything they ever had in that mill.

"All right," I said, "only let me know what it is composed of."

George, the grinder, then came and told me No. 11, first breaker, had run out, and said it was in poor shape and had not been ground since they put a new cylinder on, and it was as smooth as a hen's back.

"Well," I said, "tell Pete, the second hand about it, and get your traverse grinders and tackle ready."

Before starting the grinder, I examined the card and found George was right. It was in bad shape. After getting things ready, I told them to start her up and I would show them how I wanted the grinder set.

Pete, the second hand, and George, the grinder, stood and looked on.

"Now," I said, "you see how I set the grinder to the cylinder, very light to begin with, and when the cylinder begins to feel a little smooth, set up a little more, very little. Remember light grinding is always the best and safest, and those that grind otherwise lack wisdom."

Traverse grinders are very deceiving to the ear. Being so narrow, they do not sound so loud as a cylinder grinder, therefore great care should be taken in setting. A cylinder once flattened down with a traverse grinder will never be so good again. Card clothing wire being so soft, fine and delicate, once strained by combing back, the wire will remain strained.

After I had set the grinder, George and the second hand held their ears to it, and George said:

"It is on very light, and it will take a month of Sundays to grind that cylinder. Why! we used to put the grinder up to the cylinder hard."

"Ah, George, that is where you missed it. Light grinding is always best, and that is the cause of these cylinders being in such bad shape. You must remember, George, we have covered all the grinders with new emery that grinds and brings on a keener edge."

Most all carders seem to be very shy about covering a cylinder grinder. It is a very fine and difficult piece of work to cover a cylinder grinder and get it true the old way. There is a better way now, and that is to get the emery cloth filleting that you can wind on like a worker; then you can get them true.

While I was explaining to Pete and George about the grinding, a young man came up in the card room from the finishing room and said the agent and superintendent wanted the boss carder to come down in the finishing room right away. I told him I would be down right away. Well, thinks I to myself, what is up now, and down to the finishing room I went.

(To be continued.)

—The love that is first to enter the heart, is the last to leave the memory. —Petit-Senn.

Transferring Ribbed Tops.

BY FOREMAN.

Transferring of ribbed tops, broadly speaking, is done by two methods, each method having its advocates, each its advantages and disadvantages and are both open to criticisms.

The first or original method is by putting the top directly onto the needles of a spare cylinder. Each machine of this class is furnished with two cylinders, while one is in the machine knitting the foot, the other is having another top put on to be ready to place in the machine when the first one is completed.

With the other method, the machine has but one cylinder, the tops being first put on to what is called transfer points; these points are secured into a ring cut to correspond with the cylinder with which it is used and fit correctly over the needles, each point covering its needle in such a manner that by drawing the top down the stitches are transferred from the points to the needles. The point ring is then removed, and the machine is ready for operation.

Perhaps the fairest way will be to discuss both methods, and let the readers draw their own conclusions.

Taking the first or original method, both cylinders must be exactly alike in order to knit the goods exactly the same length, and the adjustments of both must remain exactly alike, regardless of rough handling by the help. Each cylinder fits into the machine, and has, as a rule, three points to bear on the bottom, in some cases the cylinder bears all the way around; in either case, it will readily be seen that the least particle of lint or waste, to say nothing of a broken needle butt, coming between the cylinder bottom and its rest will cause a variation in the length of the goods produced.

Then again, the constant rapping of the cylinder on the cams or ring, as it is being put into or taken out of the machine is often the cause of the cams breaking, and will frequently cause a misplacement of the sinker ring. The former means the expense of a new cam, the latter a change in the length of the fabric knit on the cylinder having the misplacement. All of which makes work for the fixer and gray hairs for the superintendent; for, if not quickly detected, the results will be very noticeable when the goods are finished.

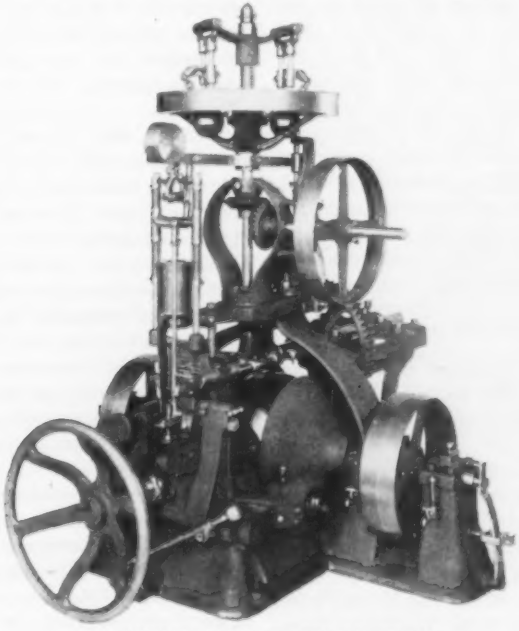
In the other method mentioned, the cylinder does not have to be removed from the machine at all, consequently there is no disturbance relating to its position, and two cylinders exactly alike do not have to be taken into consideration, which is an important factor; on the other hand, the stitches have to be transferred after being put successfully on to the points, thus giving two chances for menders, as, after the top has been put onto the points, the transfer ring holding said points must be carefully put over the needles in such a manner that each needle slides into a point (each point has a hollow space for that purpose), and the stitches are then drawn down over the needles, passing from the point to the needle.

This operation requires a great deal of skill and practice on the part of the operator, but in the hands of an expert it can be quickly accomplished. We also have to take the transfer ring into consideration. In this the points must be kept correctly spaced and in perfect alignment in order to secure the best results. With the later improvements this is more easily done than formerly, as when this method was first introduced the points were secured into the ring by soldering, and when a point was broken the solder had to be melted in order to replace the one broken. In doing so others were loosened and soon became very irregular.

This trouble has been overcome by most makers by clamping the points into the ring, thus doing away with the most objectionable feature, and making this method the most popular.

Water Wheel Governors.

The rapid advance in hydraulic development of late years has created a steadily increasing demand for a reliable water wheel governor, at a reasonable price. Some of the principal troubles with water wheel regulators have been "hunting" or "racing" on the slightest provocation, lack of co-operation with the fly-wheel effects of the plant, and lack of sensitiveness and accuracy. The inventor of The Replogle governors is one of the pioneers in this line, having spent some twelve years in designing and perfecting water wheel governor regulators.



REPLOGLE WATER WHEEL GOVERNOR.

The latest speed-governor, or controlling device, which is now used on all the mechanical governors built at the Replogle Governor Works, Akron, Ohio, is shown in the illustration of their Differential Relay Governor on this page. In an ordinary ball-governor, with any increase or decrease in speed, the first effect is a tendency to pinch or bind at the joints at the ends of ball-arms, and the balls can not raise or lower until the speed has varied sufficiently to overcome the friction at these points. This is entirely overcome by introducing an inertia-wheel in the governor and suspending it to the balls by a flexible chain. It will readily be seen that, owing to the resistance of the air, friction, etc., the inertia wheel, which receives its motion from the balls, will always lag behind them. Assuming a drop in speed, the inertia wheel will catch up with the balls, in so doing lowering itself and putting the governor in action before the balls themselves can overcome the friction at these points and drop. The opposite is true in a raise of speed. This, as will be seen, makes this speed governor quicker than an ordinary ball governor can be.

The "Differential Relay Governor" is peculiarly adapted for governing turbines having long closed flumes to admit the water, as with a very slight

change in speed the gate movement is barely perceptible, but with a heavy change in speed the gate movement is very rapid. This, as will be seen, gives the water column a slight length of time to get in motion, and in itself tends to prevent the disastrous "racing" evident in a number of the leading governors.

The Replogle Governor Works also turn out a number of other smaller governors, and are prepared to quote for all kinds of work. All their governors are provided with the inertia speed governor already described. They guarantee all the governors not to "race" under the worst conditions. The non-racing appliance is a simple device, easily and perfectly adjusted, thus securing to the plant as good government as can be had under the conditions presented.

The Silk Industry in New Jersey.

In another part of this issue are found interesting statistics relating to the textile industries of New Jersey, taken from the census reports for 1900. It appears that in year named 24,157 silk workers turned out manufactured goods valued at $39,966,662 and received in wages $9,232,532.

The census report gives an interesting sketch of the rise of this great industry and states that silk manufacturing began in Paterson about 1840 by Christopher Colt, a brother of Samuel Colt, the inventor of the revolving pistol, and the first silk mill was established in a floor of a building which the latter had erected for the manufacture of pistols. Use was made of water power derived from the Passaic river, which has been so important a factor in the industrial development of the city. This mill, although equipped with the best machinery, was not successful under Mr. Colt's management, and was closed in about four months.

John Ryle, who had learned the art of silk manufacture in England, was the next to engage in the industry in Paterson, and to his skill, energy and perseverance were due the first successful operations in the state. John Ryle and G. W. Murry, who had had some experience in a silk mill at Northampton, Mass., purchased the Colt mill at Paterson with its entire outfit. No attempt was made to weave broad goods until 1846, when Mr. Ryle, who had become sole owner of the mill, succeeded in weaving pieces of dress silk of several hundred yards length. For nearly twelve years from its foundation this mill was the only one in Paterson.

In 1852, John C. Benson erected a small mill, and in 1854 the firm of Hamill & Booth began business. Both partners were throwsters, who had previously confined their operations to their particular branch of the industry. Like other throwsters, however, they were compelled to take up the business of weaving or leave the silk industry, for the larger firms were then doing their own throwing.

The great growth of the silk industry in Paterson began during the decade ending with 1870. Great amounts of capital were invested and large mills were erected. The number of establishments increased from 8 to 29, and the value of products from $960,900 to $4,495,564. Paterson has now become the greatest centre of silk production in the United States. Large mills have grown up in other towns in the northern and middle sections of New Jersey, but this city still maintains its pre-eminence in the industry.

Proximity to New York City, the principal market for the sale of silk goods, was one of the influences favorable to the growth of the silk industry at Paterson. Of equal importance were the water power of the Passaic river, the facilities for cheap transportation afforded by the Morris and Essex Canal, and, later, by the railroads, and the available supply of labor.

—Nothing is given so freely as advice.—La Rochefoucauld.

Mill Trucks.

In the best arranged mill the transportation of material from one portion of the works to the other is an important problem, and involves a large expense. Unfortunately many of our mills are very badly arranged. The rooms for consecutive processes are often found widely separated. In woolen mills the wool sorting and finishing rooms, the first and the last, are often found side by side, and a like condition exists in cotton, knitting, silk and linen mills, dye and finishing works and bleacheries.

Thus the carrying of goods and supplies, an important operation at best, becomes a very difficult and expensive one where the slow growth of years or the bad judgment of mill managers and architects has arranged the buildings and processes so that the material passes through the work in zig-zag instead of straight lines.

It would surprise many mill owners if they should make a careful estimate of how much is lost by unnecessary carrying of material to and fro in their works. The expense is still further increased by the methods employed, which consist in many cases of "main strength and ignorance." Much can be done, however, to reduce the expense of transportation. The first thing is to get the best truck available, and suited to its particular use. To some men a truck is a truck; all look alike to them, and the consequence is the mill loses much of the advantage resulting from their use.

H. C. Slingsby, 253 Broadway, New York, makes a specialty of mill trucks, specially adapted for raw material, yarn or cloth, wet or dry, in fact, trucks for any use whatever. He asks manufacturers to state their needs in his line and give him an opportunity to supply them. He makes trucks that are not only easy to move, but also easy to turn around, an important point in the mill, and is confident that he can supply the wants of manufacturers on as favorable terms as any of his competitors.

The Lane Canvas Steaming Basket.

The difficulty of getting a basket that will stand the action of steam is known to all having occasion to steam yarn, and for this reason, the steaming basket shown in the accompanying illustration and manufactured by W. T. Lane & Brother, Port Chester, N. Y., will be generally interesting to textile manufacturers.

It is made in any shape or size to fit the steam-box in use. Its success is due to the fact that there are no materials used in its construction that are injured by heat or moisture.

In order to facilitate free entrance

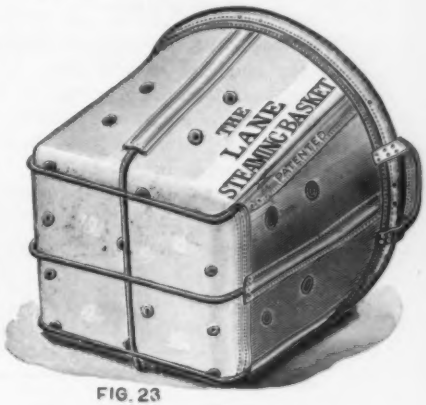


FIG. 23

of steam at all points, numerous perforations are made in the bottom and sides, which are reinforced with brass eyelets. This method of obtaining a ready steamer does not materially affect the basket for any other uses about the mill, and the possibility of employing the same receptacle for steaming and general mill work, thereby doing away with transferring of contents, which necessarily means waste or damage, will appeal to all who steam yarn.

Though the adaptability of the Lane Canvas Steaming Basket to all mill uses will recommend it to many, the point upon which the makers lay especial stress is its durability. In this respect they claim that it stands alone. In fact, some who have used this basket for several years make

the statement that the Lane Canvas Steamer will outwear from six to eight of the woven style previously used by them.

In general construction this steamer resembles the regular canvas mill basket made and designed by Messrs. Lane & Bro., the heaviest canvas and finest tempered steel being employed throughout, and the framework being made without welds.

Parties interested can obtain further information and samples by addressing the patentees and sole manufacturers, W. T. Lane & Brother, Port Chester, N. Y.

Length of Belts.

It is frequently desirable to determine the length of a belt from the shaft pulleys by which it is run. If a straight belt, the length can be determined by calculation, which, however, is somewhat involved.

Let (ai) in the diagram represent one pulley, the diameter of which is 36 in.; (bf), the other pulley with a diameter of 12 in. The lines (bc) and (fe) are extended through the circumference of the small pulley parallel with the line (jd), each of which extends from one shaft to the other. The distance between the shaft (jd) is five feet. The distance of (ba), which is one side of the open part of the belt, is the hypothenuse of the right angle (abc), and is calculated by adding the square of (bc) to the square of (ac) and extracting the square root of the sum. The result is then doubled, as (fi) is then equal to (ba).

Half of the circumference of each pulley is added, in order to include the distance (bgf) and (ahi). The calculation is as follows:

ac = 18 − 6 = 12 inches.

ab = square root of (60 × 60) + (12 × 12) = 6 1/4 inches.

ad 18 in. + cd 6 in. = 24 inches.

24 × 3.1416 = 75 1/2 inches.

61 1/4 × 2 = 112 1/2 + 75 1/2 = 198 inches = 16 1/2 feet, length of belt.

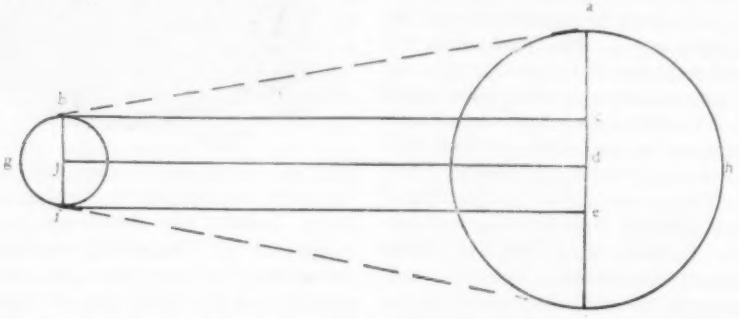
A simpler rule which is often used is as follows: The diameters of the two pulleys are added together, divided by 2, and the result multiplied by 3 1/4. To this product is added twice the distance between the centres of the shafts, which give the estimated length of the belt. In the example above named the calculation is as follows:

3 ft. + 1 ft. = 4 feet.

4 ÷ 2 = 2.

2 × 3 1/4 = 6 1/2.

6 1/2 + (5 × 2) = 16 1/2, length of belt.



Lace Effects in Seamless Knit Goods.

A method of producing lace effects in seamless knit goods has recently been patented in this country, and is illustrated at Figs. 1, 2, 3 and 4.

Figure 1 represents a seamless stocking knit by this method. Fig. 2 shows the arrangement of the circle of needles upon which the stocking is knit. Fig. 3 is an interior elevation of the circle of needles shown in Fig. 2. Fig. 4 is a detailed view of the portion 7-7, of the fabric, Fig. 1.

The inventor states that longitudinal open-work or lacework stripes have heretofore been produced in the knitting of hosiery by the omission at regular intervals from the knitting-cylinder of certain of the needles. Where simple open-work stripes are to be produced, it is only necessary to omit certain needles at proper intervals. Where lacework stripes are to be produced, in addition to omitting certain needles a specially-operating needle, called a "tuck-needle," must be employed in proper relation to the

Fig 1

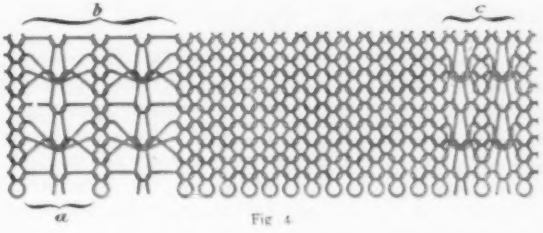


Fig 4

Fig 2

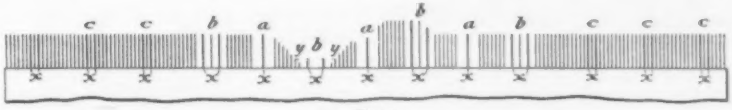


Fig 3

back of the leg prevented the proper formation of the heel and toe pockets and the sole of the foot, which must be made by the same needles and which of course must be formed of continuous plain knitting.

The inventor claims to have discovered that it is possible to produce a lacework effect by the use of properly-grouped tuck-needles without the omission of any needles from the cylinder, and that it is thus possible to knit continuously a seamless stocking with lacework effect not only down the front of the leg and instep, but also down the back of the leg.

space where the needles were omitted, and capable of producing a tuck-stitch.

Ordinarily this special or tuck-needle is used with one or more needles omitted on either side of it. This combination produces the ordinary lacework. If a broad lace effect is desired, the same combination is duplicated.

When lacework stripes have been produced in a seamless stocking, they have occupied only the front of the leg and instep by reason of the fact that the omission of any needles in

Referring to Fig. 1, it will be observed that in the stocking there shown the leg, A, and also the instep, B, of the foot are knit with stripes at short intervals, these stripes occupying the back, as well as the front, of the leg. In every instance the stripes are formed by sections of knitting containing one or more lines of tuck-stitches, while the intervals between the stripes are formed by sections of plain knitting.

The heel and toe pockets, C C, and

the sole, D, of the foot are knit in the ordinary way. The entire stocking is seamless.

Of the longitudinal stripes, three varieties are illustrated which are indicated at the top of the stocking by the letters, a b c, respectively. The stripes, a, constitute simple lacework stripes. They are knit upon the group of needles which in Figs. 2 and 3 are designated by the same letter. This group consists of a single tuck-needle, x, with two needles omitted on either side of it. In this process of knitting, each of these tuck-needles is operated differently from the regular needles; after knitting with the other needles for two plain courses, it operates for the two succeeding courses in such a way as not to shed the loop last taken by its hook, thus gathering all three threads and interlooping them with the thread of the next course, when it again proceeds to operate with the other needles.

In Fig. 3 the contour line at the top indicates the line of advancement of the ordinary needles, while the dotted line, y y, indicates the different course pursued by the special or tuck needles during that part of their operation in which they are differently operated from the plain needles.

The stripes, b, are compound lacework stripes. They are knit upon the group of needles indicated by the letters b in Figs. 2 and 3. This group, b, consists of the following combination: an omitted needle, a tuck-needle, an omitted needle, a plain needle, an omitted needle, a tuck-needle, and an omitted needle. The tuck-needles, it will be understood, operate just as did those which occurred in groups, a. The resulting fabric is shown at Fig. 4.

—The more habits a man has, the less independence.—Swift.

—Even progress should respect what it displaces.—D. Misard.

—He who is not a cynic at forty s never loved mankind.—Chamfort.

Finishing Wool and Mixed Fabrics.

XVI.

BY N. REISER.

Translated from the German for the Textile World.

Continued from July.

(Copyrighted, 1901, by Guild & Lord.)

DRYING UNDER COVER.

Drying in the open air was found inadequate to handle the production of large mills owing not only to the lack of necessary room, but also to the vicissitudes of the weather. It became necessary, therefore, to dry the goods inside the mill building; this is done either on tenter bars or drying machines.

The tenter bars are similar to those used in open air drying, but, owing to the injurious effect of the high temperature on the woodwork, they are made of iron.

To avoid exposing the workmen to the heat of the dry room, inside tenter bars are sometimes mounted on wheels and drawn from the dry room when the pieces are to be changed.

Fig. 48 shows one form of stationary tenter bars. The lower bar is adjusted by a crank, pinion gear and gear rack, and is held in place by a catch shown in the illustration.

An advantage in connection with drying cloth on the tenter bars is the opportunity it affords for correcting errors in fulling. If the cloth has been fulled too narrow, the fault, if not too great, may be corrected by stretching the piece on the frame. In such a case, the goods should be wet.

Experiments made by the author indicates that a woolen thread when wet can be stretched about 42 per cent. in length. This extensibility of a single isolated thread is greatly reduced when it is in a fulled fabric, on account of the felting of the fibres and the intersection of the threads; consequently, stretching the cloth results in tearing it long before it has been ex-

tended to the degree indicated by tests with the single threads. Correcting faults of weaving and shrinkage by stretching on the tenter bars is available to but a limited extent, owing to the fact that the width gained on the bars is again lost in the subsequent steaming and sponging.

If the goods are not steamed or sponged before being made up, the shrinkage of the fabric while being worn often ruins the garment, and is

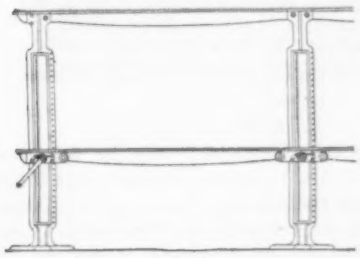


FIG. 48.

in any case very objectionable. In fastening the cloth on the bars, care should be taken that the hooks are not inserted too far from the edge.

Drying machines may be divided into two classes: cylinder dryers, and dryers having an open passage for the goods, in which both sides of the cloth are exposed to the air.

With a cylinder drying machine the cloth passes over a hollow cylinder heated by steam. These cylinders are set in a horizontal or perpendicular frame; the latter method has the advantage of saving floor space. The cloth as it comes from the cylinder dryer may be either wound on rolls, or folded on a table.

Cylinder dryers are used mostly for linen and cotton goods, and for light worsted fabrics. For woolen cloths, which should handle as soft as possible, the cylinder machines are objectionable owing to their tendency to harden the fabric; another objection is that there are no means of holding the cloth out in width.

The machine dryer with an open passage for the cloth has been found best adapted for woolen goods. One form is shown at Fig. 49, which is a tentering machine built for either one or two layers of cloth. The principal parts of such a dryer are chains to hold the cloth, an exhauster and heater. The cloth is hooked at either side on pins fastened in the chain, which carries the cloth forward. The goods are also stretched out in width, as the second chain spreads apart after receiving the cloth. The brush at the top of the machine, as shown at Fig. 49, is for the purpose of straightening and laying the nap.

These machines are convenient, and of moderate size and cost. They are

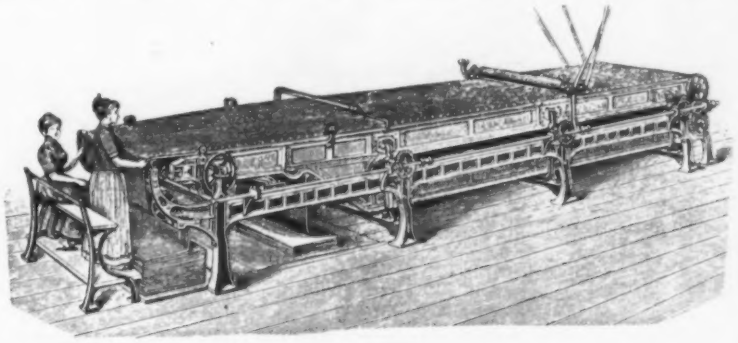


FIG. 49.

not generally employed for woolens, as it is thought they make the cloth hard and the fibres brittle, owing to the high temperature required. To obtain a large production from this dryer, very high temperature and strong air blast is necessary. It is claimed that the strong draft is ob-

jectionable, particularly in drying face finished fabrics, as the air disturbs the nap.

Fig. 51 is a cross section of an 8 layer drying machine, in which the goods are dried by bringing the hot air in contact with the cloth instead of forcing the air through the fabric. The cloth is fed in at the top of the machine, and the chains are gradually spread apart to stretch the cloth in width. The brush shown at the top of the machine is for laying the nap before the cloth is dried and during the first passage of the cloth across the machine.

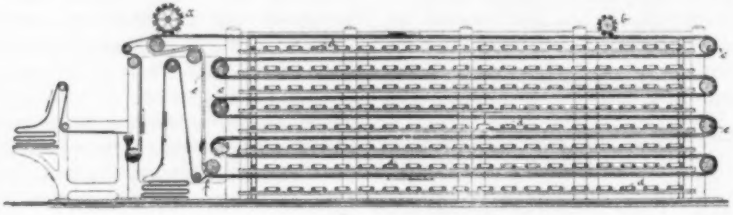


FIG. 50.

The machine is heated by pipes running crossways, so that the couplings and joints may not come directly over the cloth and cause damage by water leaking on the goods. With such a dryer, a strong blast of air is not required; the air need be changed only as it becomes saturated with moisture. A too rapid renewal of the air is a disadvantage, as it prevents the heat from evaporating as much moisture as it otherwise would.

These dryers are also built with steam pipes enclosed in a receptacle outside the dryer proper; this receptacle is connected with the dryer by a suitable passage, through which the hot air is forced by a fan. The sides of the dryer are enclosed, and a ventilating fan is placed at the top of the dryer to remove the damp air. The cloth is dried by the air current.

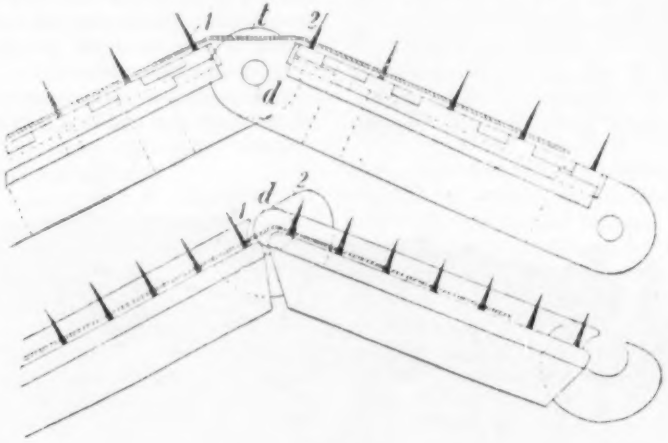


FIG. 51.

The selvages are held on the tentering machine by either needles or clamps. At Fig. 5 are two diagrams of a section of a dryer chain with needles for holding the selvages. The cloth is shown at t. The upper diagram shows the old style of construction, in which at this point the pin plates in the chain were higher than the pinion, d. When the chain passed

the turning point, the pins described a larger circle than did the pinion d, and, consequently, the space between the two end pins, 1 and 2, increased at this time. The tension on the cloth thus created, caused the selvage to be pulled out of shape.

A later form of dryer chain is

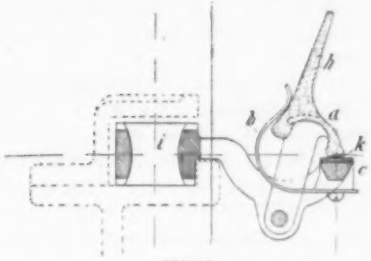


FIG 52.

shown at the lower part of Fig. 51. Here the pinion, d, is on a level with the pin plates, and the space between the two end pins 1 and 2 remains practically the same when the chain reverses.

Fig. 52 is a cross section of a dryer chain, in which the cloth is held between the clamp, a, and the plate, c, by means of the spring, b; the cloth is released by a cam, against which the arm, h, strikes, when it reaches the exit of the dryer.

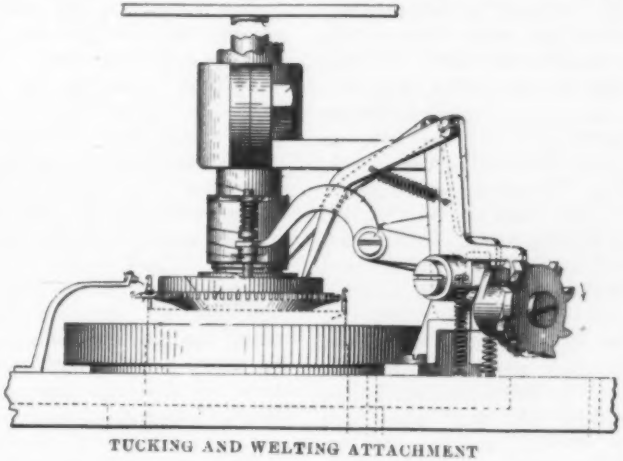
In many fabrics, the needles of the tentering machine leave holes in the selvage. When additional processes are required to finish the goods, such as pressing and steaming, these holes disappear, but when drying completes the finishing process, it is sometimes found necessary to run the goods through a special machine in which steam is forced through the selvage, and the pin holes removed.

(To be continued.)

A Tucking and Welting Attachment.

The accompanying illustration shows a side elevation of a tucking and welting attachment for dial knitting machines.

In the manufacture of hosiery and other articles of wearing-apparel it is desirable to knit the foot or other portion of plain web, the leg or other adjacent portion of ribbed web, and to finish the end of the leg with a tuck or welt, or both. In forming the ribbed portion of the web it is necessary that the dial and cylinder needles shall be operated by their respective cams, the paths of the dial and cylinder needles intersecting, as will be understood, and when a plain portion of the fabric is to be formed that the dial-needles shall be thrown out of action while the cylinder needles continue to knit, as in ordinary circular machines.



TUCKING AND WELTING ATTACHMENT

When a tuck-stitch is to be produced, it is essential that, while the dial-needles continue to be moved by the dial-cams, such movement shall not be sufficient to cause the dial-needles to shed their loops, the cylinder-needles during such time being operated as usual in the production of a plain web and the yarn being laid upon the dial-needles, but not drawn through the loops retained by them.

After a sufficient number of courses of plain web have been knitted by the cylinder needles, it is then necessary to return to full active operation the heretofore functionally inoperative dial-needles, which then, in conjunction with the cylinder-needles, receive yarn and knit.

When a welt is to be formed, it is essential that the dial-needles shall be first rendered functionally inoperative, although being moved slightly by the dial-cams to permit the yarn to be laid thereon, as in the formation of the tuck-stitch above described.

Instead, however, of returning the dial-needles into action after a few courses of plain web have been knitted by the cylinder-needles, such dial-needles are rendered fully inoperative either to receive yarn or knit, although they still retain their loops, and when thereafter a sufficient length of plain web has been knitted by the cylinder-needles, the dial-needles are returned to their full operative position, so that they receive yarn and knit in conjunction with the cylinder-needles to perfect the welt. This invention provides an attachment for dial knitting-machines comprising a dial-cam plate and means to so manipulate it under the calls of a pattern-surface that the above operations of the dial-needles shall be secured.

The dial-cam is constructed in a single piece and, when rib-knitting is being performed, the said cam is projected, with its nose in such position with respect to the dial-needles that the latter are given a full reciprocation to receive thread and knit; but when plain knitting is to be performed by the cylinder-needles, either in the formation of a tuck or welt, the dial-cam is retracted with respect to the dial-needles, so that in the rotation of the dial-cam plate the needles are given only a partial reciprocation, the same not being sufficient to cause them to shed their loops, but yet sufficient to have the yarn or thread laid thereon.

In other words, the dial-cam has a sliding movement as a whole on the dial-plate to put the dial-cam either in an operative position to cause the dial-needles to receive yarn and knit or, in another and inoperative position, to cause the dial-needles to make a partial reciprocation only, at which time they receive yarn or thread, but retain their loops and do not knit.

Meditations Over Combers.

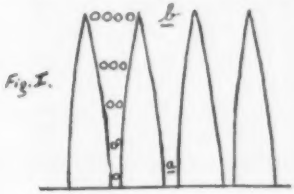
Every comber should comb the whole length of the fibres quite clean. The process of combing requires two distinct operations; the needles must traverse, first, the front end, and then the back end of the fibres.

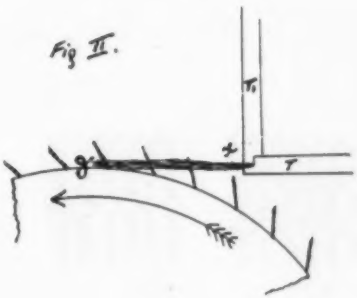
Practical overseers of combing rooms will observe that the top comb combs cleaner than the circular comb, although the latter passes through the cotton lap with a greater number of needles, while the top comb possesses, at the most, but two ranges of needles.

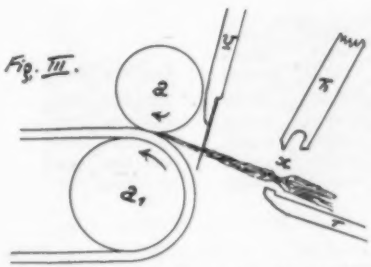
The reason of this is found in the fact that the detached fibres are drawn through the remaining thick lap whose entangled fibres serve to retain all the impurities, and herewith, assist the work of the top comb in a very substantial manner. This combing effect of the fibres behind the top comb will, evidently, increase with the thickness of the lap, because the number of fibres which retain the impurities are also increased.

In Fig. 1 several needles of the circular comb are shown as the needles necessarily terminate in a point in order to go thoroughly through the lap, it follows that the

space between the two needles at the base (a) is an inch less than at the top (b). Those fibres which are now found at (a) will, naturally, be better cleaned from all impurities than the fibres engaged in (b); the latter are only slightly touched by the point of the needles, and in the free space (b) between the points of the needles







there are many fibres in the centre which do not come in contact with the needles.

At Fig. 2, we see that the point of the needles traverse the lap close to the end of the pinchpoint (x) of the angle TT. This part will not consequently be so well combed by the point of the needles, and as we have seen, through the conical shape of the needles, the free space is greater at this point. We deduct from this fact that the cleanliness of this part of the fibres combed by the circular comb decreases from the end (g), to the pinchpoint (x): it follows that the top comb, shown at Fig. 3, must traverse the combed lap end as near as possible to the detaching rollers (aa). There is a greater length of the more or less well combed part of lap behind the needle ranges of the top comb, which will, therefore, be better cleaned on passing through. The combing will be most effective when the top comb is furthest from the pinchpoint (x). ANTHONY.

Waste in Knitting Mills.

Good material is essential, for without it no amount of skill can prevent an excessive amount of waste. With good material there must be skilled help, especially good fixers.

A well-ordered, clean, light and attractive mill is a great aid in keeping down waste. "Cleanliness is next to godliness." Bad knots, bunches and uneven yarn are other causes of waste. When the latch crosses such imperfections it will clog the needles, and the result will be bending or breaking of them.

Instead of having the machine tender clean the machines every noon or night, it is more profitable to have a bright, active boy do this work, who is learning to tend the machines.

Stop motions are very useful, but they do not supply the price of good judgment, common sense and caution. Eternal vigilance is the price of a small percentage of waste, and the old adage should be constantly borne in mind: First, be careful; second, be careful; third, be careful.

Care should be taken that too many courses are not made after the loose toe has been finished by the fitter. After a little practice, the operator can do with 1/4 in. raveling just as well as with 1/2 in., and on a production of 1,000 dozen per day this makes a saving of $1.50 in the waste account.

The writer prides himself on the

fact that at the mill in which he now owns a half interest there is now made but one-quarter as much waste as was made ten years ago when he first became superintendent of the works. Waste should not exceed one ounce per dozen, providing a good quality of yarn is used.

CIRCULAR.

A Guide to Weaving.

BY IVO KASTANEK.

II.

(Copyrighted, 1902, by Guild & Lord.)

(b.) MIXED RIBS.

These have different sized ribs in the same weave, and are classified as long and cross ribs.

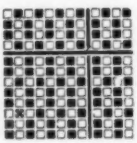


Fig. 32.

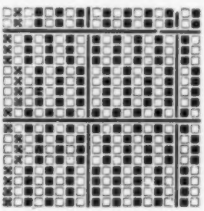


Fig. 33.

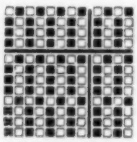


Fig. 34.

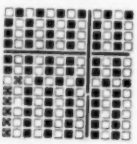


Fig. 35.

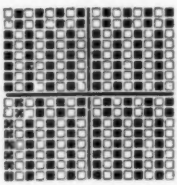


Fig. 36.

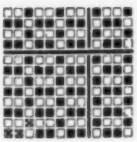


Fig. 37.

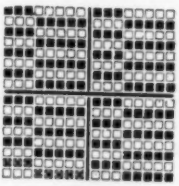


Fig. 38.

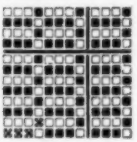


Fig. 39.

Figs. 30 to 36 are mixed cross ribs. Figs. 37, 38 and 39 are mixed long ribs. (Figs. 30, 30A, 31 and 31A will be found in the July issue on page 66.)

The weave at Fig. 30 is used chiefly for ladies' dress goods, upholstery fabrics and vestings; Fig. 30A shows the cloth woven with weave at Fig. 30.

All of the weaves so far referred to have but two threads in the pattern in either direction, and can, therefore, be woven with two shafts.

The selvage for cross ribs is woven with a cotton weave.

Cheaper material may be used for the filling of cross ribs, as the filling threads do not come to the surface on either side of the cloth.

Likewise, cheaper material may be used for the warp of long ribs, since the warp threads do not come to the surface of these fabrics.

A part of the warp yarn for the weave shown at Fig. 31 may be made of cheaper material; thus the warp may be dressed, 2 wool, 1 cotton, or 2 silk, 1 cotton.

Fig. 31a shows a fabric made with this weave.

Fig. 39a is a fabric woven with the weave shown at Fig. 39.

Figs. 40 and 41 are sections taken lengthwise of the mixed rib shown at Fig. 34.

IRREGULAR RIBS.

These are made by breaking up either plain or mixed ribs.

Fig. 42 shows an irregular rib made by raising for two picks each successive four threads of the weave.

Figs. 42, 43, 44 and 49 are irregular ribs made from plain ribs.

Figs. 45, 46, 47 and 48 are made from mixed ribs.

Fig. 43a shows the cloth correspond-

ing with Fig. 43, except that the repeat of the weave covers 6 threads instead of 8, as shown at Fig. 43.

Irregular ribs are also made by changing long ribs, Figs. 50 and 51.

Fig. 52 is a cross section of Fig. 42.

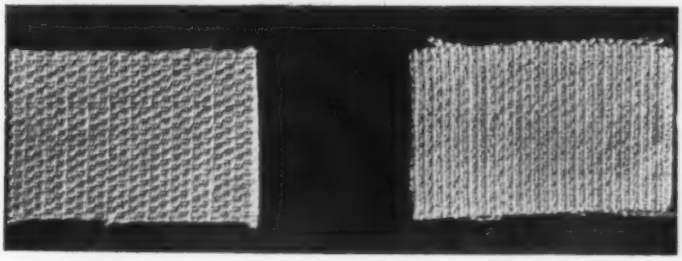


FIG. 39a. FIG. 43a.

FANCY RIBS.

Fancy rib weaves are used chiefly in the manufacture of worsted goods for the production of fancy effects by

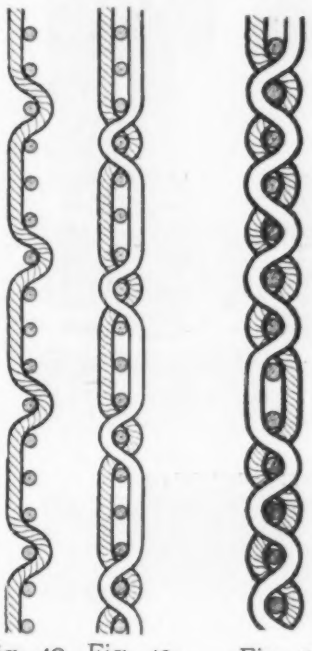


Fig. 40. Fig. 41. Fig. 52.

combining the ribs with other weaves forming stripes and checks. The rib weaves in such cases are changed to make the cloth firmer, and cause the rib to lie flat, so that by combination with other weaves the surface of the cloth may be smooth.

This is accomplished in cross ribs by raising the warp thread over a single pick, and is shown in Figs. 53, 54, 55 and 56 by the divided black square in the repeat of the pattern, at the lower left hand corner of the figure.

In long ribs it is accomplished by raising the filling above a single warp thread in the space where the filling would otherwise float without interruption on the back, and is shown in Fig. 57 by blank squares which break the filling floats.

Weaves 53 to 56 are used chiefly for ladies' dress goods. Another method of increasing the firmness for rib weaves consists in using special threads, as at Figs. 59, 60 and 61. These extra threads must be very fine and their number depends upon the degree of firmness desired.

Fig. 66 shows the curvature of the warp thread in the ground weave in Fig. 62.

Fig. 67 shows the position of a warp thread in the rib weave in Fig. 62.

The warp threads in the rib part of the weave have no curvature, but lie perfectly straight, consequently, they are slacker while weaving, if wound on the same beam as the rest of the warp.

Figs. 63, 64 and 65 are stripes made by combining rib with other weaves. Here, the ribs have been changed to make the fabric firmer.

FIGURED RIBS.

The ground work of these textures is a rib weave; the figure is formed by a floating of either warp or filling, or of both.

In designing figured ribs the figure is first drawn, as shown at Figs. 68a and 69a, but on design paper.

The ground rib weave is then filled in over the whole surface, and then the floats of warp or filling which are to make the figure are formed by inserting risers for warp floats, or by removing risers to form filling floats.

In either case, a float must include at least two repeats of the weave. For example, Fig. 70 is the motive of the pattern in Fig. 71. A repeat of the ground weave of Fig. 71 covers four threads. The insertion of a riser between two warp floats serves to combine two repeats of the weave.

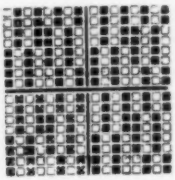


Fig 42

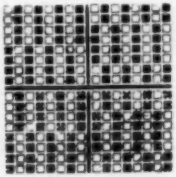


Fig. 43

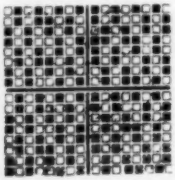


Fig. 44.

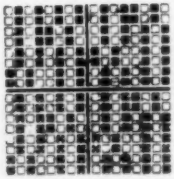


Fig. 45.

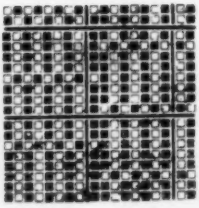


Fig. 46.

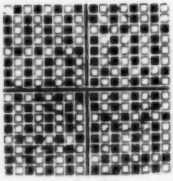


Fig. 47.

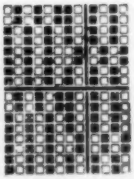


Fig. 48.

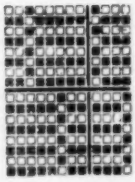


Fig. 50.

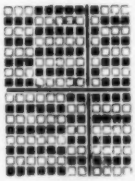


Fig. 51.

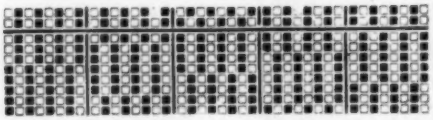


Fig. 49.

Figs. 70 to 73 are figured cross ribs in which the figure is formed by inserting risers, indicated by (x), and converting two or more repeats of the ground weave into one warp float.

Fig. 75 is a figured long rib in which the figure is formed by removing a riser and thus converting two repeats of the weave into one filling float.

Pleasing effects can be secured by combining both long and cross ribs in the same weave. Fig. 74 shows an example.

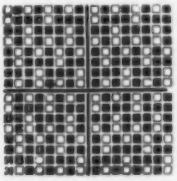


Fig. 53.

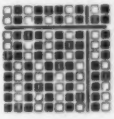


Fig. 54.

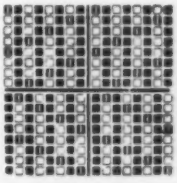


Fig. 55

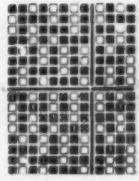


Fig. 56.

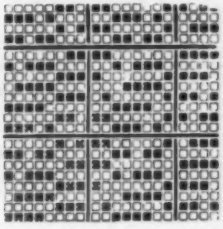


Fig. 57.

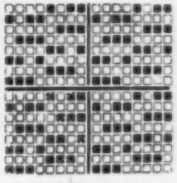


Fig. 58.

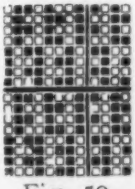


Fig. 59.

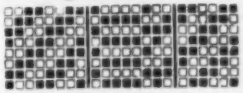


Fig. 62.

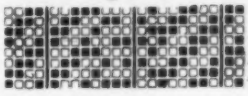


Fig. 63

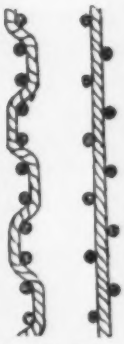


Fig. 66.

Fig. 67.

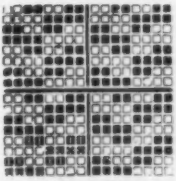


Fig. 60.

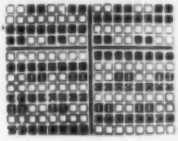


Fig. 61.

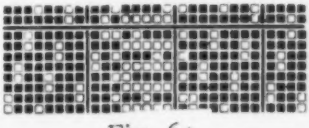


Fig. 64.

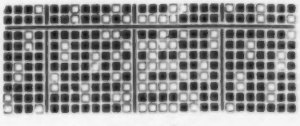


Fig. 65.

Fig. 76 is a cross rib, dress 2 red 1 black, and woven 3 red 1 black. The figure is formed by combining on the same pick two repeats of the weave to make one float for 16 warp threads.

and then raising the line four threads and combining the two repeats for 13 warp threads. The risers inserted to make the float are indicated by a cross (x). Fig. 76a shows the cloth thus woven.

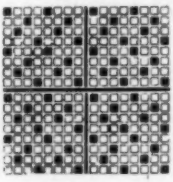


Fig. 70.

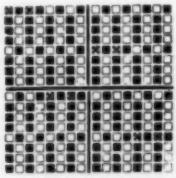


Fig. 71.

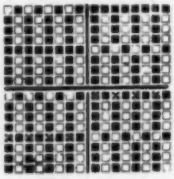


Fig. 72.

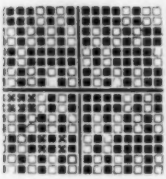


Fig. 73.

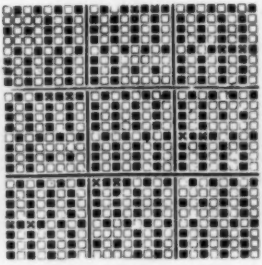


Fig. 74.

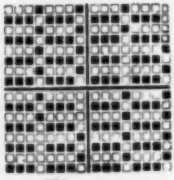


Fig. 75.

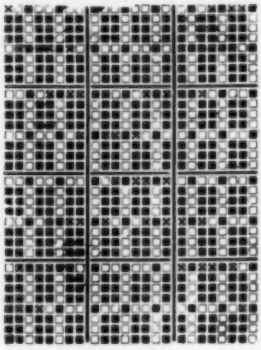


Fig. 68.

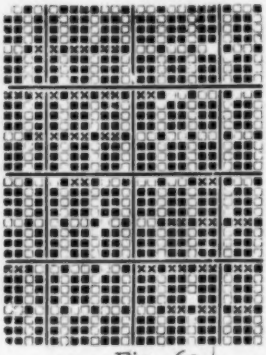


Fig. 69.

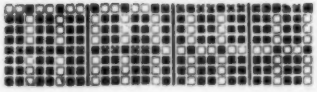


Fig. 76

The most elaborate effects in figured ribs are made by a combination of both cross and long ribs in the same pattern. The accompanying Figs. 77 to 83 are examples of such designs.

Fig. 77a is the motive adopted for the design. The number of threads in the pattern is next fixed upon, in this case 16, and the motive is painted on the designed paper as indicated by the crosses (x), Fig. 77b to cover the 16 threads.

The filling rib weave is then marked on the painted portion of the design,

Fig. 68a.

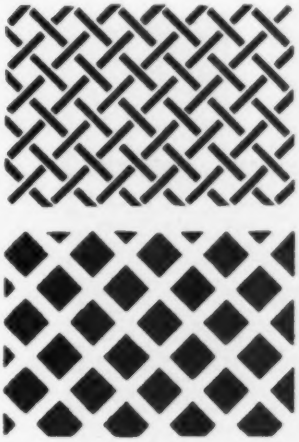


Fig. 69a.

and the rest of the pattern is filled in with a warp rib weave.

Fig. 77 shows the completed draft. The crosses here represent sinkers.

FIG. 68b.

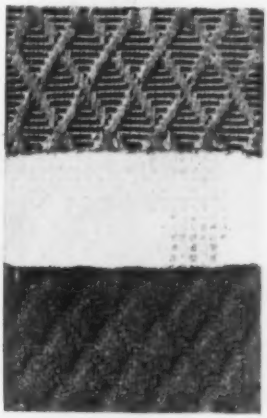


FIG 69b.

Sometimes the rib weave and the threads allotted for it do not come

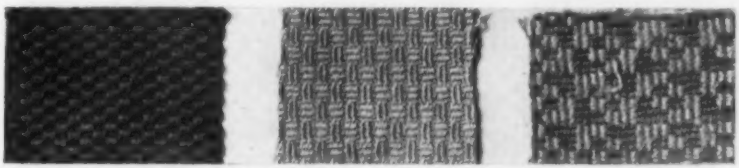


FIG. 7da. FIG. 78c. FIG. 83b.

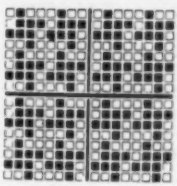


Fig. 77a.

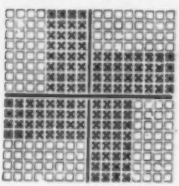


Fig. 77b.

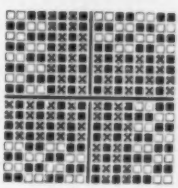


Fig. 77.

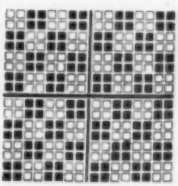


Fig. 78a.

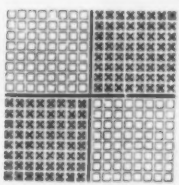


Fig. 78b.

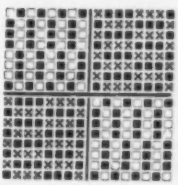


Fig. 78.

out even. In such cases, the odd threads are woven with plain weaves, as shown at Fig. 78.

Fig. 78a is the motive, and Fig. 78b — the draft painted to receive the weave.

Fig. 78c shows the cloth corresponding to Fig. 78.

Figs. 79a, 80a, 81a, 82a and 83a are motives corresponding with the completed drafts, Figs. 79, 80, 81, 82 and 83 respectively.

Fig. 83b shows the cloth corresponding to Fig. 83.

Fig. 79a.

Fig. 80a

Fig. 81a.

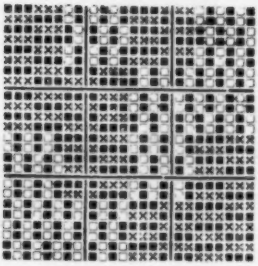


Fig. 79.

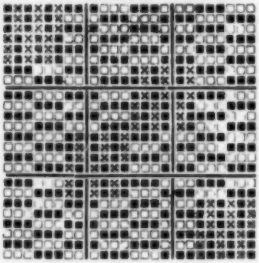


Fig. 81.

Fig. 82a.

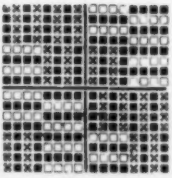


Fig. 80.

Fig. 83a.

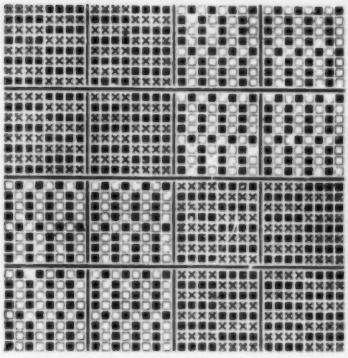


Fig. 82.

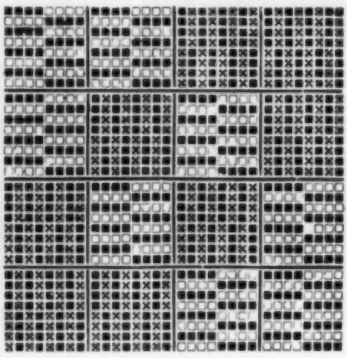


Fig. 83.

In Figs. 77, 78, 79, 80, 81, 82 and 83 the crosses (x) represent sinkers, where the warp passes under the filling.

FIGURES ON A PLAIN WEAVE.

Figures are also formed by floats on

a plain weave in the same way as with figured ribs. First, the plain weave is marked on the draft for the

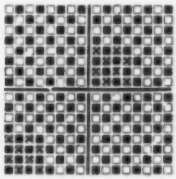


Fig. 84.

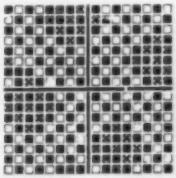


Fig. 85.

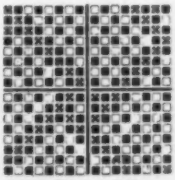


Fig. 86.

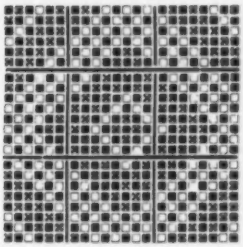


Fig. 87.

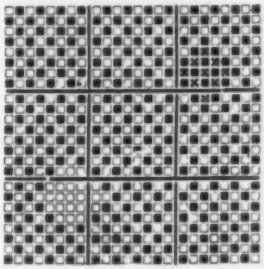


Fig. 88.

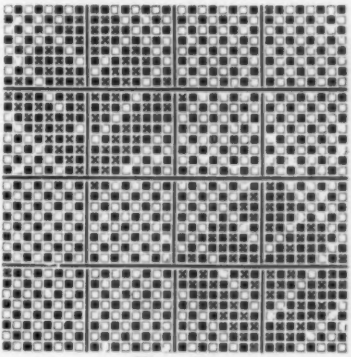


Fig. 89

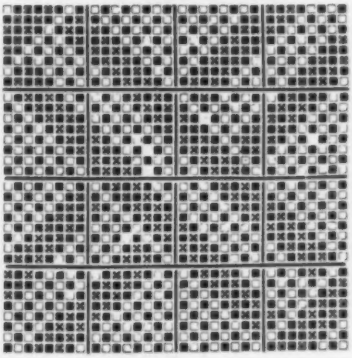


Fig. 90.

number of threads in the pattern; then the motive (Fig. 89a), for the design, is copied on the draft by filling in risers (x) to make floats, Fig. 89.

These weaves are used chiefly in weaving cotton, linen and silk goods, and for cotton or worsted warps woven with mohair or luster filling.

If the figure is to be formed by filling floats, risers must be removed instead of added.

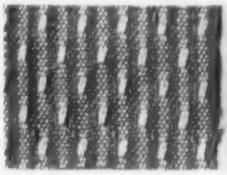


FIG. 84a.

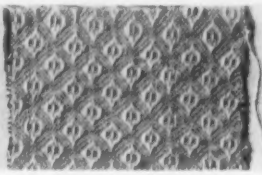


FIG. 87a.

FIG. 88a.

Fig. 88 shows a draft containing both warp and filling floats; Figs. 84 to 90 are examples of figured plain weaves.

Fig. 89a.

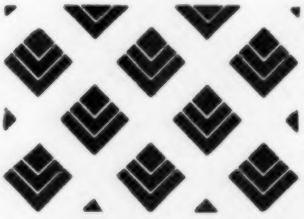
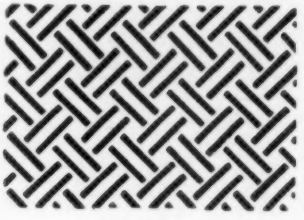


Fig. 90a.



Figs. 84a, 87a and 88a show samples of the cloth corresponding to the drafts at Figs. 84, 87 and 88 respectively.

Figs. 89a and 90a are the motives for the drafts at Figs. 89 and 90, respectively.

(To be continued.)

A Silk Dye House in Switzerland.

During the recent international labor conference at Zurich about twenty-five delegates visited a silk dyehouse at that place, and one of the party gives in the Cotton Factory Times the following account of the visit.

"It was a silk place, a yard dividing the two portions, and in the yard was the boiler and engine-house, whilst all around were trees in full leaf, and there was a cleanliness about the whole place that I haven't seen in an English bleaching works and dyehouse. About 400 hands were employed.

"The large sheds were lofty, and light, and airy. The wood cisterns would number over 100, being from 2 ft. long and 18 in. wide to 8 ft. long and 2 ft. wide. The hanks of silk were hung on bamboo canes, and two men attended to each short vat or cistern, and four men (two at each end) to the larger vats. It was a much easier job than I have seen in any English dyehouse, and I confess that it pleased me to see men employed at work that would be placed in women's hands for cheapness in our own country. There was no very heavy work, of course, as the work in a silk-works is lighter than in a piece dyehouse.

"By the 'wuzzers,' of which there were about eight or ten, there were seats provided for the men where they could watch the machines. The concern seemed to have every contrivance for ease, comfort, and health of the workers. The men wore wooden sabots, or clogs, and appeared well built and neat. I should think one-half of them had collars on. All of them leave work wearing coat, collar and boots, and you would hardly guess they were factory workers, and especially dyers.

"They use strong chemicals in this Swiss dyehouse, and before the effluent is turned out into the river it has to undergo precipitation treatment. There is a tank in the yard, covered over, and as the dyehouse effluent is turned under the yard a man lifts a lid up, puts in some liquid, stirs it up, and the stuff is pumped up in a little room over our heads. The sediment is conveyed into great presses, and the residuals used again in the dyehouse process, whilst the water turned into the river is clarified—so much so, indeed, that fish swim about within a few yards of the place.

"The female section are at work upstairs, a goodly number of them in preparing the hanks and opening them out, but away from steam or heat or dirt. There was not a child in the whole mill, and I should say that in no mill or dyehouse in Eng-

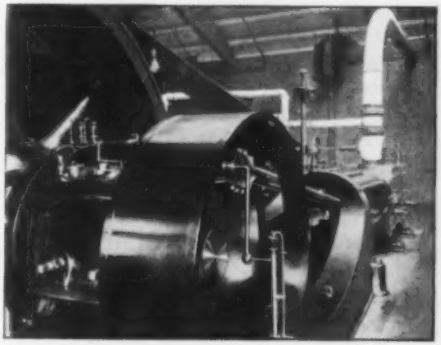
land are there the signs of as much care and comfort as in this large Zurich dyeworks. They work ten hours per day.

"There was a moderately sized cook house on the premises, soup, with meat in it, being supplied to the workpeople at the rate of 1 1/2 cents per tin. The men were eating their breakfast whilst working. They rest an hour for the mid-day meal. The females get about $2.20 to $2.40 a week. The men get from $3.60 to $5.00 per week."

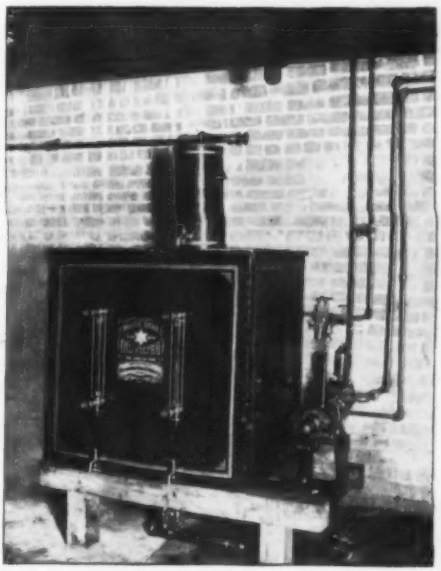
Modern Lubrication of Engine Bearings.

In the construction of a power plant, the intending builder, in order to obtain the greatest possible economy in operation, either procures the advice of competent counsel, or embodies in the structure and installation of the necessary equipment, the observation of years of experience as to what seems most suitable for the requirements.

The concentration of economy in both first cost and future maintenance of a power plant, is a most essential feature in these days of great activity, and is the determining factor between success and failure. Constant study is required, involving extensive practical experiment, combined with intelligent management, and ofttimes the observation of latest devices, as installed by others, with the result that the maximum efficiency, both from an economic and engineering standpoint, is only at-



COMPOUND ENGINE EQUIPPED WITH THE GRAVITY OILING SYSTEM.



THE DUPLEX TYPE WHITE STAR OIL FILTER.

tained through the employment of the latest approved methods and appliances.

The boiler room of today when compared with that of a decade ago has become revolutionized, while the engine room has kept abreast of this progress. A most important means of attaining the maximum in the economical operation of the machinery is the automatic lubrication by mechanical means of main engine bearings, slides, eccentrics, crank-pins, etc.

This problem has been successfully solved in a most effectual and comprehensive manner by the gravity oiling system as installed in the power plant of the Armstrong Cork Co., Pittsburg, by the Pittsburg Gage & Supply Co., Pittsburg, Pa. A portion of the engine room is shown in the accompanying cut, showing a 600 H. P. Allis engine so equipped. The oil tank may be seen in further end of this same view, while the oil cups and piping upon the engine bearings are plainly visible. The filter which is located in basement below is shown in separate view with the pump for conveying the purified oil back to the tank.

A proper conception of the advantages of such an equipment will be gained when it is understood that a complete pipe system for oiling dispenses with 80 per cent. of the labor for attention by automatically handling all the oil applied to or released from the machinery and reducing to a minimum both the loss by friction, and its attendant expense for repair, in continually supplying the bearings with an abundance of oil, while the waste involved in hand oiling is entirely obviated.

In addition to this, a remarkable saving in the cost of lubrication is effected by the White Star Filter, which thoroughly purifies every drop of oil discharged from the machines, delivering it again to the system in perfect condition for use over and over again.

In the entire process, the only loss of oil is from vaporization, as the pipe system prevents all waste.

The oil is fed to the several cups by gravity, from the elevated reservoir, and after passing through the bearings is carried in piping to the filter, where it is purified and returned by the pump to the storage tank above. The supply of oil is thus continuous and uniform, securing the most desirable results.

The operation of cleaning the oil is one of interest. The impure oil enters the auxiliary tank on top of the main body, and is drained through a removable screen, passing out through a spigot into a funnel, also provided with screen, and suspended in the central separating chamber, and finally discharging out through the perforated conical foot of the funnel, into water kept at a moderate temperature by means of steam coil.

By continued action of the heat, the oil becomes thinned, and all water and heavy impurities are rapidly separated from it by gravity, and the former being automatically carried off by an overflow pipe at the back, and the latter accumulating at the bottom of the chamber are flushed out occasionally through a drain connection.

The constant admission of oil to the separating chamber eventually causes the oil to reach the level of the outlets near the top and flow into the adjacent filtering cylinders. Specially prepared cloth is wrapped around these cylinders, and in the passage of the oil through the body of the cloth, the oil is entirely freed from every vestige of impurity not previously eliminated by gravity, and is thus prepared for continued use.

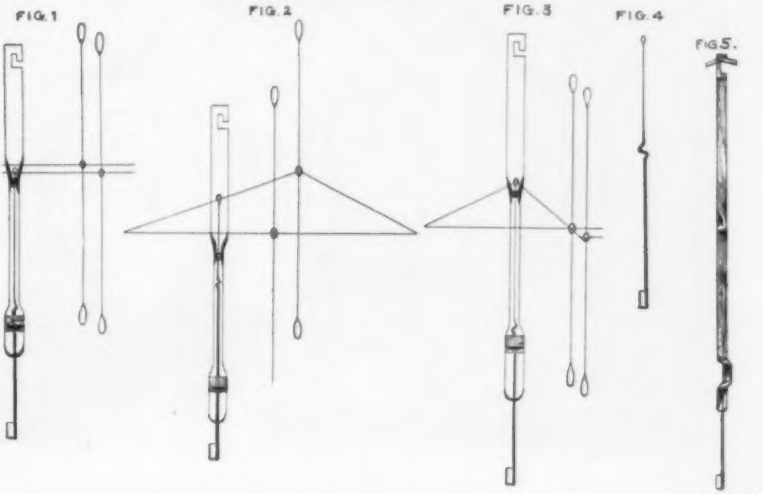
This system has been in successful operation since installation in September, 1901, by the Pittsburg Gage & Supply Co., Pittsburg, Pa., from whom further information may be obtained.

Wire Doup Heddle for Gauze Fabrics.

ARTHUR DYSON.

There have been many requests for information as to the proper working of the doup heddle as shown in the January issue, as to where it can be obtained, and whether it is as successful as is claimed. I have tested them for open coarse work, and find them to be in many respects superior to the regular worsted heddle.

As to the makers of the heddle, the only information that the writer has, has been forwarded to the Textile World, where it may be obtained by any one interested.



In this short article I will give a few more sketches showing the different positions that the heddle takes, and to make general remarks on the same.

At Fig. 1 is shown the heddle at rest, or both the crossing and doup yarn at the lowest point. It will be seen that the yarn which passes through the back harness and then through the eye of the doup, is a little lower than the crossing end, so that the yarn is sure to clear when crossing from one side to the other.

At Fig. 2 is shown the back harness raised by the dobby head, and of course this carries up the doup heddle, while the crossing thread remains stationary. There should be an auxiliary shaft run with the doup shaft, with the wire running through the bottom loop of the needle or doup. When the back harness is pegged to be raised, there should be a peg inserted to raise this auxiliary shaft; thus relieving the yarn from the burden of pulling up the doup heddle. Of course, the reverse is true, and the auxiliary shaft helps to pull down the doup yarn. During this operation the other end of the yarn is resting between the flat side of the "standard" heddle and the doup; and thus the shed is formed. The size of the shed is regulated by the "lift" given to the wire heddle, and can be made larger or smaller as the case demands, by the same means used on ordinary dobby work.

Fig. 3 shows the effect when the thread is crossed; this crossing is accomplished by somewhat similar means to the ones used on ordinary doups. Starting with the crossing thread lying between the "standard" and doup; with the doup raised, we allow the back harness to descend to its lowest point. At the same time the auxiliary shaft is lowered, and the "jumper" is allowed to raise the crossing thread to the centre, and the standard is pegged so as to raise it. All the harness meet at the central

point, but, owing to the position of the two threads as shown in Fig. 1, the crossing thread is a little higher than the doup thread, and thus the eye of the doup is drawn into the groove made for it in the centre of the standard, while the crossing thread descends again to its original position.

The "yoke" attachment on the "jacks" carries the doup along with the standard up to the required height, and forms the crossing shed. The amount of "give" necessary to allow the yarn to pass under the crossing thread, without unduly straining the yarn, is regulated by the slackener, or easing motion.

Fig. 4 shows the needle, or doup, when detached from the heddle, and gives the bend in the centre of the needle, which prevents the needle, or doup, from being raised or lowered too far, thus acting as a preventive against accidents through the breaking of the dobby strap, etc.

Fig. 5 shows the perfect heddle, ready to slip on the frame when the frame is in the loom.

Textile Manufacturing in Russia.

BY WARSAW.

The industries of Russia are now passing through a critical period. The activity that followed the enactment of the high tariff has disappeared and been succeeded by pronounced depression.

During the period of prosperity, all conditions were favorable to production, and included encouragement offered by the state, influx of foreign capital, and a general feeling of confidence.

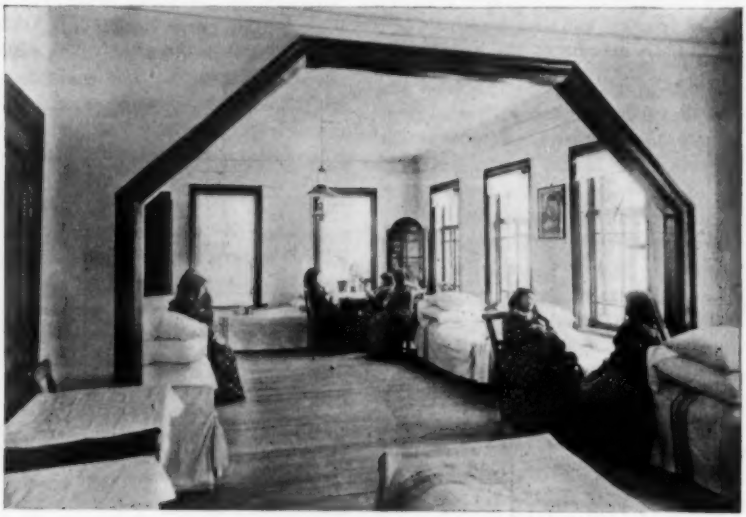


FIG. 1.

In the cotton industry many plants were constructed of prodigious size, and today the cotton spindles in the whole of Russia number between five and six million. One large concern is worthy of particular mention, Messrs. Sawa Morovoff, Sons & Co., with mills at Nicolski, Gorodische and Wasulowo, operating 193,100 spindles, 3,200 power looms and large print and dye works. There are five hospitals in connection with their mills, with 418 beds; three schools with 1,780 scholars, and lodging houses to accom-

modate nearly all their operatives.

The illustrations are taken from the Malutine works, and show the elaborate character of these institutions supported by the mills for the care and education of their operatives. Fig. 1 is an interior view taken in the women's department of the hospital; Fig. 2 is a view of the men's dormitory; Fig. 3 shows a portion of the nursery for infants; Fig. 4 is a view of the school buildings, and gives a very good idea of the scale on which these extra industrial institutions are carried on, and why their cost adds materially to the cost of the mill product.

FIG. 2.

The Malutine works have 147,000 spindles and use over 4,000 H. P. For fuel, they use peat obtained from nearby lands of which they are large owners. Up to 1890, when they began to use naphtha, these peat fields gave employment to 1,000 workers; since then the number has been reduced to 500.

Russian mills are built very high; one-story buildings are very rare, there being but only one or two in the large manufacturing city of Moscow. Owing to the severity of the climate, which is very cold in winter, the walls are built very thick and the windows are made double throughout. It is hardly necessary to add that the cost for heating is very high.

Russian mills are well ventilated, and every precaution is taken to prevent accidents to the employees. The average Russian mill gives employment to more operatives than do corresponding plants in France, England or Germany. There are 5,100 operatives in the Malutine works already mentioned, and these are divided into several shifts. Certain parts of the works are operated night and day, or twenty-four hours per day with two gangs; another section is run twenty hours with two gangs, and a third part of the works run ten and a quarter hours per day.

The average monthly wages of the help are as follows: Overseers, $19.24; mule spinners, $12.22; men weavers, $10.92; women weavers, $7.28 to $10.92; ring frame tenders, $8.19; other departments, $3.90 to $7.80.

In these works oppression of the help, which still exists in nearly all

parts of Russia, has been abolished, and the operatives are here treated with the utmost consideration, as our illustrations go far to show.

The lodging houses consist of eight two-story wooden buildings, and ten three-story stone buildings, accommodating 976 persons. There is one three-story stone building for operatives who are without families, and also five one-story dormitories to accommodate 1,000 persons coming from distant villages.

In addition, there are public kitchens and dining rooms, large bath houses, also facilities for daily bathing in the lakes surrounding the mill, a maternity hospital, general hospital, schools, etc. The enormous cost of all these establishments is a large item in the cost of the goods, and profound and possibly violent changes in this industrial condition must be effected before Russia can become an exporting country.

Vast quantities of cotton goods are used in Russia, which from this time forward must be numbered among the largest consumers of raw cotton. A few of the mills are owned by French or Germans, but as a general rule the industry is controlled by Russians. A large portion of the goods consist of printed calicoes. The Russian people are very fond of bright colors, and patterns with many colored flowers, red predominating, are very popular. The high tariff is prohibitory for the cheaper grades of goods, but does not prevent the importation of expensive cloths from Paris, which are purchased by the rich.

FIG. 3.

The Russian government is encouraging cotton growing in the empire, and it is probable that sometime in the future the immense cotton fields of Russian Asia will produce sufficient raw material to supply the home mills.

The Russian wool industry is rather small, the whole empire having but 300,000 worsted spindles. Large quantities of woolen goods are manufactured in the households throughout the country, but this home industry is declining under the competition of power spinning and weaving.

The woolen manufacturers have recently addressed a long petition to the government, asking for protection for their industry against the heavy importations from Germany. So far this request has not been favorably acted upon, and, in the writer's opinion, the petitioners lose sight of the fact that Russia is more particularly an agricultural country, in which the price of manufactured goods is already very high, and that any further increase of the cost of such necessaries of life as woolen clothing will result in great suffering among the people. Famines in certain districts of Russia are even now not infrequent, and raising the tariff on woolen goods will not tend to remove such periods of suffering. We have already mentioned the increased cost of supporting extra industrial institutions in the cotton industry, and this expense is as heavy in the manufacture of woolen goods.

In addition, the Russian operative is less skilful than Germans or French; consequently, there will be a larger proportion of imperfect goods. Again, there are three or four times as many holidays as in France or Germany; taxes, as well as the rates of interest, are much higher. The Russian mill hand is less skilful because he does not work steadily in the mill. A portion of the year is spent by the greater part of them on the farms.

The silk industry has been developed to a considerable extent. The raw silk of the Caucasuses and Turkestan, although inferior to that from France and Italy, is in great demand, owing to its low cost.

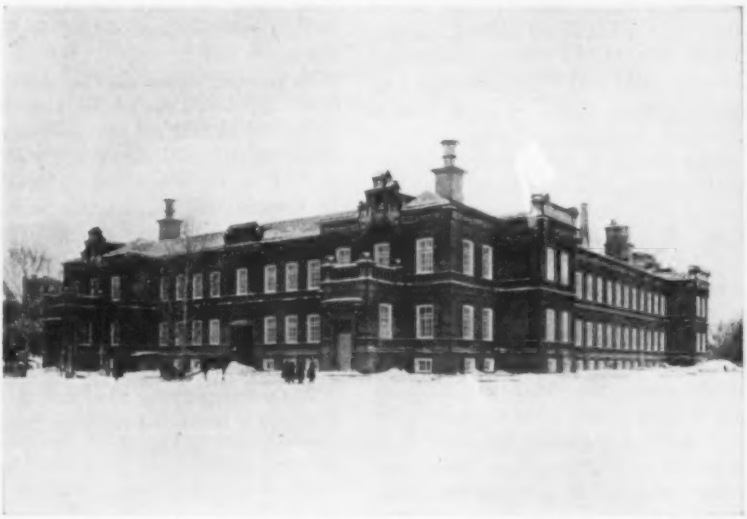


FIG. 4.

Knitting Yarn.

While looking over a few copies of the Textile World, and particularly that of October, 1901, I was very much interested in a paper read before the meeting of the New England Cotton Manufacturers' Association, held at Niagara Falls, by Mr. Albert Deabill, on the Knitting Industry, and I am surprised that even at this late date some able writer has not taken it up.

The gentleman should be congratulated on the able manner in which he

handled the subject. Every knitter should have been delighted to read it as I was; as there was more truth than poetry in it.

It is a well known fact, that the greatest trouble in a knitter's industrial life comes from imperfect yarn, especially when an operator is caring for ten or twelve machines on string work. If one could only convince some managers, especially those of new firms starting into business, that the profit and loss lies in the waste, leaving out the seconds and others that are beyond being classed. A machine may be in perfect order, but bunchy yarn will send it to the hospital in short order. I have seen a machine running perfectly until it struck either a very tender spot or disk cut out, and then the needles jig, as the boys say, until one gets out of time. When the jig was up the needles joined and after the needles were repaired and counted thirty out of one hundred and seventy-six were in the scrap barrel.

Then comes another friend of the waste room, the winding. Knitters are willing to pay more for cone yarn as it saves the cost of winding. It is a question whether they save anything or not. It is about an even thing when the way in which the winding is done is considered. Yarn has come under my observation, in which the ends have been nearly thrown while the spindle cone was running, and in the knitting the machine ran out, causing not only waste of from one to twelve inches in length, but the breaking of needles and sometimes of a cam.

Then again, the ends in coming off may bring another thread with it; then you have your needles so choked that the belt is thrown off and again a number of needles broken. So between broken needles, broken cams, the waste and overseer's or knitter's time, it makes expensive work. The overseer gets "rats." He tries to locate the cause by looking for the number of the winder, so that the firm can make a claim, but the paper cone is so marked up on the inside by a myriad of letters and numbers that he gives it up as a bad job.

Now I am finding fault, not with the cone winding machine, but with the operators. I know of a mill doing its own winding; it has twelve machines, and I have seen the operators when a thread broke, or when they should have tied a new end, put the end into their mouth and place it on the revolving cone. Then again, in their hurry to place the proper cone on the spindle they would in many instances put it only partly on, the yarn running under, another cause for breaking. Then the guides very often would be shifted by the operators instead of the fixer doing it. For my part, I would not allow an operator to have a tool around the machine. The overseer or fixer is employed to care for the machine.

FLEETWOOD.

A Fashioned Stocking on Circular Frames.

The accompanying illustration, Fig. 1, shows a fashioned stocking recently

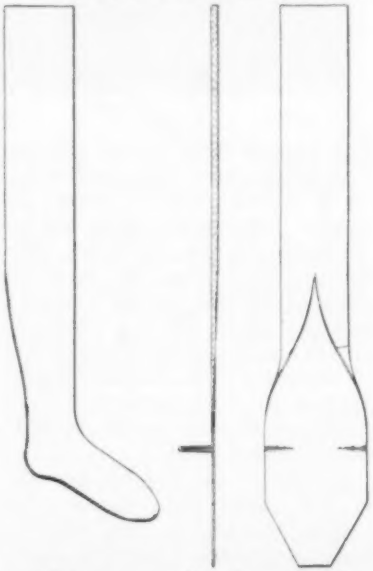


FIG. 1. FIG 3. FIG. 2.

patented in this country, and in the manufacture of which a blank, shown at Fig. 2, is used. Fig. 3 is an edge view of this blank, which comprises an upper tubular portion and a lower flat portion, the latter being so shaped that when it is folded and its edges seamed or connected, the fashioned and lower parts of the complete stocking will be produced.

This blank is made upon a circular-knitting machine. At the outset of the operation, the toe portion of the blank is fashioned. Then the foot portion is knit. Then the heel parts are formed. Then the ankle part is produced. Then the gradually-widened leg portion is fashioned until the entire circle of needles are in action. Then the seamless part of the leg is produced by continuous rotation of the cam-cylinder.

Improvements in Knitting Machinery.

Among the year's improvements which were not noticed in our report in last month's issue of the developments of last year, are the new models of machinery of the Nye & Tredick Co. of Philadelphia, who build a standard line of rib knitting machinery, for both hosiery and underwear.

Among these improvements may be mentioned a self-adjusting screw take-up without ratchets, levers or springs, adapted for knitting the most tender yarns and enabling the machine to be run at highest speed; also a most perfect weight take-up; attachment for automatically changing the length of the stitch and for using short pattern chains; automatic needle protectors and stop motions, which prevent breakage of machinery and wasting of fabric in case of an accident to the needles or yarn; yarn tensions adjustable to any yarn in an instant; a lever for stopping the machines at the slightest touch; roller dogs which prevent drawing and marking the fabric; automatic oilers, and a number of other minor features, which yet have much value in turning out perfect work.

Their automatic rib knitting machine for knitting shaped fabrics now may be built with a cardigan stitch or slack-course cams. This machine has an improved section cam cylinder.

Their automatic ribbed hosiery machine now finishes the top of the fabric automatically with a welt or selvage, and it makes a loose course for transferring it to a footing machine. The past year has been a busy one for this concern.

Vibrator for Separating the Tuft on the Heilmann Comber.

A complete transformation was made in the Heilmann comber by the change that dispensed with bringing the leather roll on the cylinder. There is no doubt that this improvement marks an epoch in the art of combing cotton. By this change, the

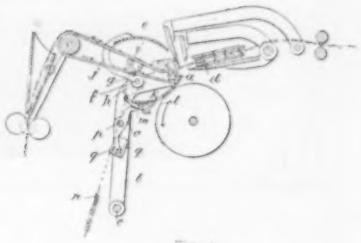


Fig. 1

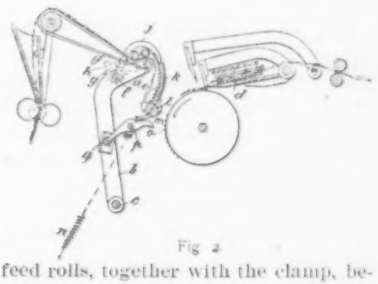


Fig. 2

feed rolls, together with the clamp, become movable and are given a vibratory motion by the arm to which they are fastened.

Another method consists in keeping the feed rolls stationary, and making the draw-off rolls movable. One objection to this method is the necessity

of keeping the cylinder scrupulously clean.

When the tuft is drawn off, the guard in front of the drawing-off rolls is brought very close to the cylinder and must, therefore, be very small. The Elsaessichen Maschinenfabrik have lately brought out an improvement designed to obviate this difficulty.

In Figs. 1 and 2, which illustrate the new comber, e, is the breaker and k, the guard plate. In order to keep this guard as far as possible from the cylinder during the drawing-off of the tuft, it is mounted on a stud, l, which is fastened to the frame of the machine. In this way, it occupies a better position during the drawing-off than if it were fastened to the swing arm, b, which carries the draw-off rolls.

This arm, b, moves the guard in the following manner: A spring, n, fastened to the end of the guard gives a twist to the latter; this twist is limited by the movable latch, o, which is likewise fastened to the frame of the machine. At the other end of this latch is a roll which glides in a groove in the casting, q, which is fastened to the movable arm, b.

It is readily seen what movement will be given to the guard, k, when the arm, b, moves to the left. The latch, o, falls so that the spring, n, twists the guard plate to the left. This motion takes place while the tuft is being broken and is reversed when the arm moves back and a new tuft is grasped by the rolls. The breaker, e, which completes the separation of the tuft from the fibres hanging to the teeth of the cylinder, is mounted on the stud, f, in the arm, b, and carries the guide, g, in which the arm, h, slides. This arm swings on the slide, f. During the breaking of the tuft, the arm, b, moves to the left; this gives the arm, h, a swinging motion, which is reversed when the arm, b, swings back. In this way, the guide, g, moves away from the slide, i, and the arm, h, slides in the groove. The result of this motion is that the breaker moves to the right and completes the separation of the tuft.—Oest. Wollen und Leinen Industrie.

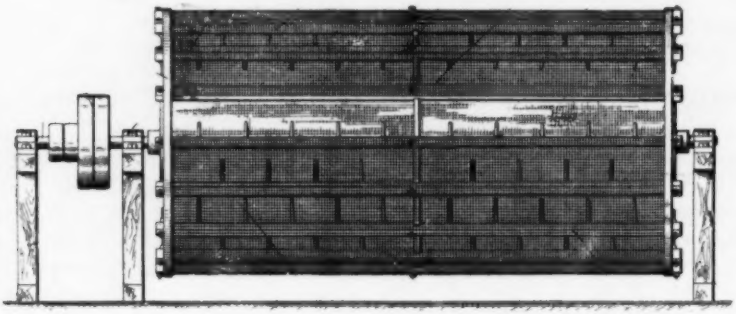


FIG. 1.

Improved Oxidizing Machinery for Fast Black on Hosiery.

The accompanying illustrations show the latest machine brought out by A. N. Dubois, Philadelphia, Pa., for oxidizing fast black on hosiery.

This apparatus has improvements upon the old oxidizing drums still used by a good many fast black dyers and mills doing their own dyeing. Fig. 1 is the front view of the machine; at the left is a double set of pulleys for driving; these enable the machine to be driven at a slow or fast speed, as desired. A high speed is very desirable in the production of lisle thread finish, which requires a speed fully one-third higher than by the slow

speed generally used by fast black dyers.

The general construction is very strong. The rails holding the pins or lifters are bolted at both ends so securely that it is impossible for them to get loose at either end, which is a decided improvement over the old oxidizing drums.

Fig. 2 shows an oxidizing room, with its ventilators, and the steam pipe for heating the room. This figure shows two machines in one room, with its centre perforated partition. Right here is a valuable improvement, as

eter has several electric wires at different contacts connected with the switchboard; when the temperature in the room reaches the degree for which the switchboard was set an alarm is given at the bell outside of the room, indicating to the men in charge of the oxidizing room that the temperature is getting too high and that they must at once shut the steam off, and blow off the steam from the steam pipes to prevent the temperature of the room getting higher, thereby avoiding tendering the goods, while in process.

These electric thermometers are

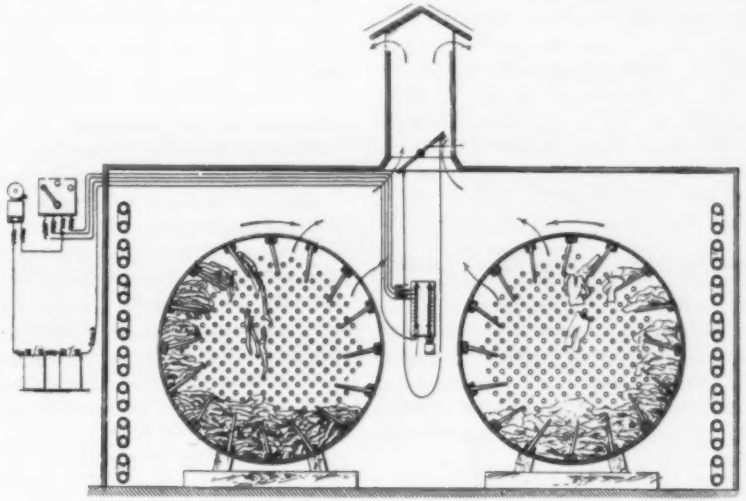


FIG. 2.

can easily be seen by the angle of the pins, which carry the goods to the upper part of the machine and cause them to fall vertically instead of at an angle of about one-third of the diameter of the machine, as is done by the straight pins of the old drums. The most valuable part of the new machine is the electric thermometer and hygrometer, combined on the same board, for the accurate measurement of the moisture and dry heat, while oxidizing and finishing lisle goods.

The thermometer, as can be seen by looking at Fig. 2, is connected with an electric battery and an alarm bell and switchboard. The electric thermom-

made to order only, with as many electric contacts as desired, and at whatever degree required, and can be used for any fast black formula.

We know it to be a fact that a good many thousands of dollars can be saved on tendered goods among fast black dyers and mills doing their own dyeing, simply by adopting this electric thermometer or thermostat, in combination with their oxidizing rooms, which are the two main claims of Mr. A. N. Dubois' patent.

Fig. 2 shows two machines in a room, but single machines can be used if desired.

Mr. Dubois states that this stationary machine, as he calls it, is better

adapted for small mills or small buildings; where the buildings are large, with plenty of floor space, he strongly recommends the adoption of his rotary oxidizing apparatus, described in our issue of July, 1901, to which we refer our readers.

He is prepared to take orders for the manufacture of either of his machines, either the rotary or stationary ones, and will arrange for any dyer or manufacturer of fast black goods to use his electric thermometer and hygrometer with the oxidizing machine, as patented June 10th, 1902, on royalty for each electric thermometer used, or he will take contracts for complete fast black dyeing plants with his well-known sanitary fast black formula, with lisle thread, silk finish. Arrangements for using the dyeing formula only will be made, if desired.

Further information may be obtained by addressing A. N. Dubois, 2170 Sedgley Avenue, Philadelphia, Pa.

How to Obtain and Use Twist Constants.

BEN SHAW.

The accompanying diagram shows the train of twist gearing on a spinning frame, and in it I have assumed the number of teeth in order to illustrate more clearly the manner of figuring.

Before showing how constants are obtained, it would be better to go directly through this train of gearing and see what twist the frame would give.

We must first find how many turns the cylinder or drum makes to one turn of the front roll.

$(112 \times 84) \div (20 \times 36) = 1008 \div 720 = 13.067$ revs. drum to one of front roll.

The next step is to find the number of turns of the spindle to one of the drum.

The diameter of the drum is 7 inches, and of the whirl of the spindle 13/16 inches. It has been my custom to add to the diameter of each 1/8 inch, as an allowance for the diameter of the spindle band.

13/16+1/8=15/16 inches, diam. whirl.
7+1/8=57/8=114/16 inches, diam. drum.
114/16÷15/16=114/15=7.6 turns of whirl to one of drum.

Now, as the drum makes 13.067 revolutions to one revolution of the front roll, and the whirl makes 7.6 revolutions to one of the drum, the number of revolutions of the whirl to one of the front roll would be the product of 13.067 multiplied by 7.6, or 99.3092 turns.

As the diameter of the front roll is usually one inch, the circumference would be 3.1416 inches, which must represent the number of inches of yarn delivered at one revolution. Therefor, 99.3092 turns of twist would go into 3.1416 inches of yarn, and the turns in one inch must be:

99.3092÷3.1416=31.61 turns of twist per inch.

This calculation is expressed by the following formula:

Front roll (112) × stud (84) × diam. drum (7+1/8) divided by twist (20) × cylinder (36) × diam. whirl (13/16+1/8) × circum. front roll = 31.61 turns per inch.

To obtain a constant, this same formula is to be used, but leaving out the twist gear, or, as it is expressed in algebra, "calling the twist gear X:"

(112 × 84 × 7 1/8) ÷ (36 × 15/16 × 3.1416) = 632.2 constant.

This constant, divided by the number of turns of twist desired, will give the necessary gear; or the constant, divided by the gear, will give the twist.

Take for illustration the twist found in the foregoing example, 31.61 turns per inch:

632.2 ÷ 31.61 = 20 gear.

Or, if it is desired to know the number of turns of twist a gear of twenty teeth will give:

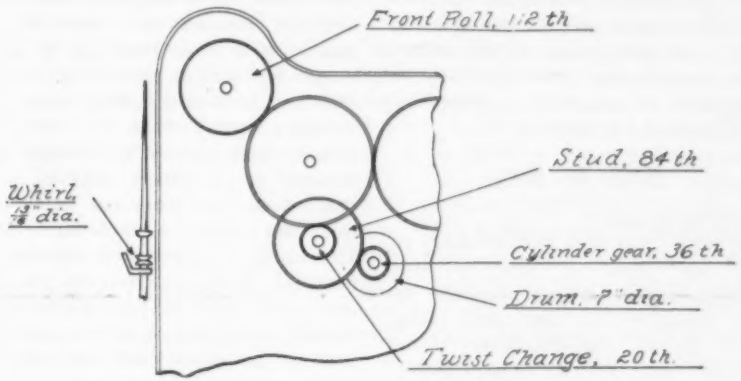
632.2 ÷ 20 = 31.61 turns per inch.

There is no quicker method for getting at twists and the gears necessary to obtain them than by the use of constants, and the results are accurate.

The constant for a certain train of

gearing having been once figured, a great saving of labor and time is effected. In all machines the general principle for obtaining the constant

A glance at the foregoing formula will show this method to be correct, as to the relation between the front roll speed and the speed of the spindle.



Twist Gearing of Ring Frame.

remains the same, whether for twist or draft.

A method for figuring through a train of gears, and one which has proved very satisfactory to me, is as follows:

Start with the front of the machine, and disregard the question of drivers and driven, as at times that simply serves to perplex.

Draw a division line; place the first gear above it, the second below, the third above, and so on, taking diameters of rolls as if they were gear teeth, being careful, of course, to avoid any intermediate gears.

Our Textile Industries.

The census office has issued a statement relating to the textile industry, in which the number of employees, yearly wages and value of the products in the different branches is given for 1890 and 1900 as follows:

According to these statistics the average wages paid in the textile industries in 1890 amounted to $326.06 per year, or $6.27 per week, as compared with $315.17 per year, or $6.06 per week in 1900, a loss of 3 1/3 per cent. in the ten years. Wages were unquestionably much higher in 1900

	1890.			1900.		
	OPERATIVES.	WAGES.	VALUE PROD.	OPERATIVES.	WAGES.	VALUE PROD.
Woolens	76,915	$26,139,194	133,577,977	69,350	$24,969,282	120,038,792
Worsteds	42,978	14,944,986	79,194,652	56,551	19,883,402	118,705,710
Knit Goods	59,588	16,578,119	67,241,013	83,387	24,358,627	95,482,566
Carpet and Rugs	28,736	11,122,259	47,7.0,193	28,411	11,121,383	48,192,351
Felts	2,142	883,380	4,654,768	2,688	1,024,835	6,451,691
Felt Hats	3,500	1,249,976	5,329,921	2,108	937,855	3,5-1,940
Shoddy	2,155	707,099	7,887,000	1,926	748,948	6,730,-74
Cotton Goods	218,876	63,024,538	247,381,724	302,861	86,699,782	339,198,619
Dyeing and Finishing	19,661	8,911,720	28,900,560	24,776	12,726,316	44,963,331
Silks	49,382	17,762,441	87,2?8,454	65,416	20,256,258	107,256,258
Jute Goods	1,194	368,585	1,120,121	4,507	1,181,798	5,383,797
Linens	586	189,204	547,273	3,283	1,036,859	4,368,178
	505,650	$194,872,481	731,303,676	650,264	$204,247,347	900,364,187

than during the hard times of 1894-97, but these census figures indicate that this rise did not equal the loss during the hard years. Changes since last year which have been in the direction of higher wages may restore the 1890 rate. The yearly value of the product per operative was $1446.66 in 1890, as compared with $1384.61 in 1900, a reduction of 4 1/3 per cent.

Cotton Mill Help.

Editor Textile World:—

I was interested in reading in the May issue of your valuable magazine, the address delivered by the President of the New England Cotton Manufacturers' Association, Mr. C. H. Fish, Dover, N. H., with particular reference to that part of his address in which he alluded to the existing conditions of feeling between employers and employees, and I have no doubt that he voiced the sentiment of nearly all our cotton manufacturers, when he spoke of the desirability (indeed, it is almost a necessity), of a better understanding between employers and employees.

If we take it for granted that mill agents are seeking to better the existing conditions, perhaps a few words from an overseer may cause some agents to think over the matter, and see if they have not neglected to use one of the means which are at their command to help solve the problem.

Would it not be a good thing if agents would keep in closer touch with the overseers in their employ, and be more ready to profit by the knowledge which they have gained by experience in their several departments?

An overseer has to stand between the employer and the employed. On the one hand, he is expected to get the maximum amount of work from the employee, keep the cost as low as possible and look out for the interests of the employer; on the other hand, he must try and be fair to the help, and treat them as near as possible as he would like to be treated, if conditions were reversed.

Sometimes an overseer finds that a part or the whole of the help in his department are being paid less than they are at some other mills, or it may be that, while they may be getting as much as at other mills, conditions may be such that they should be getting a little more; it may be that they are handicapped by obsolete machinery, or machinery that is not adapted to the particular class of work for which it is being used. Then again, the overseer can sometimes see where improvements can be made, such as better light, better ventilating, and many other things that tend to the comfort and convenience of the employees.

Now there are some agents who are rather hard to approach on the subject of more pay, better machinery or anything else that causes an outlay of money. Would it not be wise to look upon the expenditure as so much more money invested on which there would, probably, be a good return?

Many times it happens that an overseer knows of places in his department where money could be invested to good advantage, but the agent may be hard to approach on these matters, so the overseer simply tries to do the best he can with what he has to do with rather than have what may prove to be a disagreeable session with the agent.

No overseer need expect to get new machinery or improvements or more pay for his help unless he can give good reasons for the change, but would it not help matters many times, if agents would make it easier for the overseers to talk over these matters and encourage rather than discourage them in so doing?

Conditions have changed a great deal in cotton mills in the last fifteen or twenty years. There was a time, when in almost every mill, if there was a vacancy in the positions of third hands or second hands, there

would, probably, be anywhere from two or three up to a dozen or more bright young men, who were ambitious, and who had fitted themselves for promotion. The result was that overseers always had material for second hands, and not only that, but every overseer who had any boys were taking them right into the mill, with the hope that sometime they might rise to responsible positions.

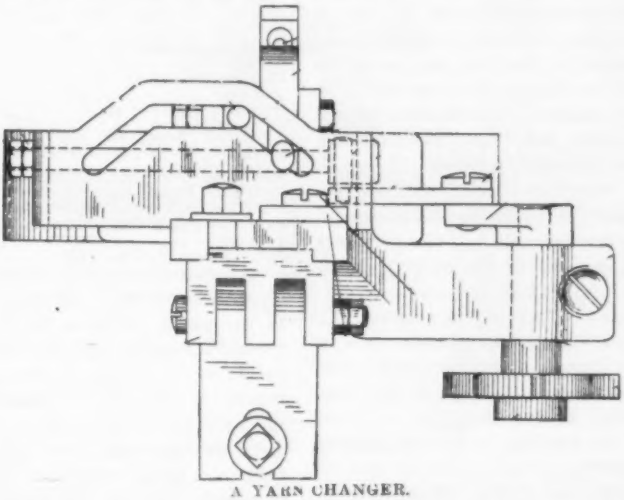
At the present time, these conditions are greatly changed, and you will scarcely find an overseer or second hand, who has boys, but who will say if you ask him if his boys are going into the mill: "Not if I can help it," or something similar, and it is often quite a problem for an overseer to find a young man with sufficient intelligence and ambition, whom he can promote to the place of one who drops out.

The class of help in our New England cotton mills has deteriorated rapidly in the last few years. The time was, when in discussing the question of Southern competition, the argument was presented that the Southern mills had the advantage on account of running more hours per day. This argument was met with the statement that the New England mills had a far more skilful lot of help, which more than compensated for the difference in hours of labor.

I doubt very much if the help in the Southern mills are as hard to make into competent and skilful cotton mill help as the help employed in large numbers in many of our New England mills, and with whom one has to talk through an interpreter or by signs.

I believe that the cotton mill must be made a more desirable place to work in, so that at least a large percentage of our cotton mill help will be of a higher degree of intelligence than the class that is rapidly filling our mills, otherwise, it will be simply impossible to maintain the high standard of the product from New England mills.

WAAREN.



A YARN CHANGER.

A Yarn Changer for Circular Machines

The accompanying diagram is a side elevation of a mechanism for changing the yarn on a circular knitting machine. The inventor, who has secured a patent in this country for the device, states that the object of the invention is to provide a yarn-changing mechanism for a high-speed knitting-machine which will operate with certainty and precision, which is simple in construction, composed of few parts and not liable to get out of order; another object of the invention

is to provide a device which will effect a change of yarns during the narrowing and widening operations, for producing different colors in the same heel or toe.

The attachment may be applied to any circular-knitting machine in which yarns of different colors are used alternately.

In the use of this yarn-changer two threads are carried through the guides, 44 and 54. In the ordinary operation of the machine one of the yarn-carriers is in elevated inoperative position, while the other carrier is in a depressed operative position, supplying yarn to the needles.

Whenever it is desired to effect a change of the yarn-supply to the needles, a crescent slide is raised so that the star-wheel comes in contact with a stud, whereby a partial stroke is imparted to the cam-slide and the stud of the inoperative yarn-carrier is made to engage the horizontal part of the cam-slot and throw the yarn-carrier into operative position.

The star-wheel next engages the stud and the cam-slide completes its stroke; the heel of the other yarn-carrier is engaged by the other inclined portion of the slot, and the yarn-carrier raised to inoperative position.

This raising of the crescent slide to effect a change of the yarn may occur in changing from leg to heel knitting, from heel to foot knitting, or from foot to toe knitting, or for the purpose of producing striped work at one or more intervals during either the leg, heel, foot, or toe knitting.

Power Required for Spinning Cotton

BENNO NEISS.

In Leipziger Monatschrift.

(Continued from May.)

For testing the power consumed by the 24 mules, a 300 H. P. engine was connected with them, and the power indicated while the machines were running. Another diagram was then taken with the belts on the loose pulleys, and the difference between the power indicated by those two diagrams was taken as the power consumed by the mules.

The principal difficulty in making the test was that all the machines were running when the diagram was taken, whereas in actual practice a certain percentage of the spindles are always idle, owing to unavoidable stopping of the machines for splicing spools, piecing broken threads, etc. To make the test agree better with actual practice, two of the 24 mules were, therefore, stopped when the diagram was taken.

Previous tests with the dynamometer to determine the power required for running a cotton mule during the different portions of its movements gave the following results.

An 800 spindle mule, 1 3-8 inch gauge, spindles running 11,000 turns per minute:

Starting, e. h. p.	15.43
Carriage going out	7.89
Carriage out	.79
Carriage going in	1.58
Average	10.6
Per 1000 rev. per sp.	.0012

Another mule, 1000 spindles, 1 3-8 inch gauge, 12,000 spindle turns per minute:

Starting, e. h. p.	24.93
Carriage going out	11.41
Carriage out	1.47
Carriage going in	2.90
Average	14.4
Per 1000 rev. per sp.	.0012

An examination of these figures shows what a great difference there is in the power required for the operation of a mule at different times. The result of the tests of the mule by means of the engine diagram were not as uniform as in the case of preparatory machinery and ring spinning frames. The variations were, undoubtedly, due to the different positions of the mules when the tests were made.

For the 24 mules three engine tests gave the following results, 271 7/10 H. P., 282 4/10 H. P., and 253 3/10 H. P. Evidently when the last test was made, more or less of the machines must have been in the position where the least quantity of power was being consumed.

Further tests with the 24 mules were made by testing one-third, or 8 mules at a time, as this enabled the experimenter to keep close watch over

the machines and avoid having any of them standing during the experiments.

The first section tested consisted of 8 mules, 1 3/8 inch gauge, having 660 spindles, each running from 8600 to 8900 revolutions per minute; the result gave 65 8/10 indicated H. P., this is equal to .00142 indicated H. P. per 1000 turns of one spindle.

The second section consisted of 8 mules of 803 spindles each, 1 1/8 inch gauge; speed of spindles varied from 3636 to 8700 turns, with an average of 7614. The diagram showed 76 9/10 indicated H. P., consumed by the mules, which was .00156 indicated H. P. per 1000 turns per spindle.

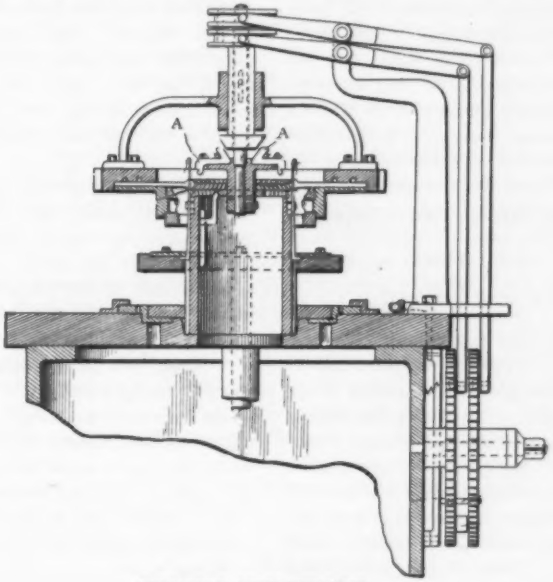
The third section consisted of 8 mules of 808 spindles each, running 8300 to 11,500 spindle turns per minute; the indicated H. P. for these mules was 86 5/10, which was equal to .0015 indicated H. P. per 1000 turns per spindle, which is equal an effective H. P. of 20 per cent. less or .0012.

According to these three tests the total indicated power for the 24 mules amounted to 229 2/10 H. P.

For the entire spinning mill the effective indicated H. P. was as follows:

Machinery.	e. h. p.	ind. h. p.
Preparing	66.0	82.5
1 card room	61.4	76.7
2 card room	63.6	79.5
13 ring frames	48.8	61.0
24 mules	183.4	229.2
Machines	423.2	528.9
Power transmission	120.	150.
	543.2	678.9

The indicator for the whole mill showed but 492 8/10 effective or 616 indicated H. P. This marked difference of 9 per cent. is explained by the fact that more or less of the machines are always idle in a mill at any one time; a test to determine this amount indicated that from eight to ten per cent. of the machines in the mill were generally idle during working hours.



WELTING ATTACHMENT.

Forming Welts on Knitting Machines.

A machine, recently patented in this country, is designed for forming welts on goods knit on circular machines. The accompanying illustration is a

sectional plan of a circular machine equipped with the new device.

A, represents transferrers, of which there is one for each needle which is engaged in the fabrication of the tubular fabric. These transferrers are arranged to enter the loops of the stitches and to take up the slack of the web as it is fabricated for a sufficient distance to form the desired length for the welt.

They then return these loops to the needles, so that the latter then not only have upon them the loops which would ordinarily be there, but also have these other loops, which were previously taken from them and returned, as described, so that the two sets of loops are subsequently thrown off at the same time, and in that way the hem or welt is formed.

Memoirs of a Veteran Master Mechanic.

EBEN GOULD.

(Continued from May).

Mr. B—— was not a man that any one need be afraid of; all one had to do to get along with him was to do his work, and if he wanted anything call for it and make his wishes plain, so that he, Mr. B——, could understand it, and there was no trouble, but go to him for anything and not make one's wants plain, would make him grouty. I saw that many of the help in the mill, especially the relatives, were afraid of him. I worked for him about eight years and got along quite well. I stayed in this mill for 41 years, working nearly all the time, and during that period worked under ten different agents, and only with one of them had any unpleasantness that amounted to anything, and then he did not stay out his first year, leaving when he had been there about nine months.

Mr. B—— was one that did not wish large belts used; he wanted to transmit all the power from one shaft to another by using gears instead of belts, and it took quite a while to get him clear of that notion; but when he did change his mind, it was a complete change, and he got rid of the gears as fast as he possibly could. In time, I threw out 47 pair of bevel gears from what was then called the brick mill (the buildings at the upper mill were all of wood at that time). The brick mill had a heavy, upright shaft running from the wheel pit up through all the stories of the mill; this upright was connected with the wheel by quite a heavy pair of bevel gears, then by other gears. The power was connected from the main shaft driven by the engine. I had been at work only a few days when Mr. B—— asked me to go with him, for there were some gears at the brick mill that made a terrible noise and did not run well.

He took me to the upright, and no wonder they made such a noise; the two shafts were badly out of true, so much so that the gears could not be set half way to the pitch line as they should be. I told him at once what the trouble was, and he said:

"I wish you would take help and come in tonight and fix it, if you can, so as to stop that noise."

I told him I should need no help, it would be but a short job and I could do it alone. While I was at work that night a man came in, who worked as a carpenter about the mills. He said:

"What are you meddling with those gears for?"

"Just to see if they won't run without making such a noise," I replied.

"Well," he said, "you better let them alone, for they were set by one of the best mechanics in the country, and you can't better them."

Now these gears were a new pair that had been put on only a few days before I came, and already had part of two teeth broken about one-third of their length, and a new pair had been ordered to replace them. After placing the shafts in the right line and setting the gears on to the pitch line, I found the watchman and told him to be sure that no one went near them

until starting time in the morning, when I would be there.

Morning came, and so did Mr. B——. He was surprised to see these gears set clear and still more so, when the mill started up, and heard how still they ran. I said to him:

"I understand you have a new pair of gear ordered to take the place of these in case they break."

"Yes," he answered.

"Well," I said, "you will not need them; these gears will last until your upright and all your gears are taken out and you are using belts in place of the gears." Six years later, the last pair of bevel gears were taken out and this pair with the two broken teeth were the last ones to go out. I will here state that the above gear had been running with the upright 1 3/4 in. out of line with the horizontal shaft. No wonder it could not be set suitably into the gear.

When I first began to work at the Maverick Mills, I found the supply of iron and other stock was very short, so I made out quite a long list one day of all the iron and steel that was needed for repairs. One of the old hands said to me:

"What are you going to do with that paper?"

"I am going to give it to Mr. B——, and ask him to order the stock so that we may have something to work with."

"He won't get one piece of it; we have tried to have him get pieces two or three feet in length, but he won't do it and you will never get such a lot of iron brought into this shop."

I at once saw where the trouble was; they were all afraid of Mr. B——, and did not dare to give him an order large enough to amount to anything, and he would not send to Boston for such a small amount, but would let them go out to a local shop near by and get the small piece they needed. When I handed my first list to Mr. B——, I knew at once that he was all right by the pleased look on his face. He looked over the list and said:

"This looks more like it; I will order it at once."

Then he said:

"The men have been in the habit of asking for a little piece at a time, not enough to order from the city, so I have sent them to the blacksmith here in the village."

The man who was so sure that I would never see a pound of that order was a good deal surprised when he saw a team back up to the door with quite a large load of iron. The men all said:

"How in the world did you ever get old Tom B—— to buy all that iron?"

"By giving him an order," I replied. "The trouble with you has been that you were afraid to ask for what you wanted."

I will here state that I never found a better man to furnish supplies than was Mr. B——; he was always willing to furnish plenty of help, and would furnish some outside work to keep the help busy at work, such as building new machines.

When I first went to work for Mr. B——, I found in the shop all the castings for a set of three 48-inch cards; the castings were from Worcester. These were intended for spare work to keep the men busy when there were no repairs to be done. This set of cards was built and set up in the carding room of the brick mill No. 2, and the first lot of wool went on them July 5, 1856; I had commenced building them some time in the February of that year. They are still running. Another set was built several years later from castings made in Andover, Mass.; these are now in the No. 3 mill.

The first cone wool duster I ever saw was built by my father soon after he went to work for Edward Harris, in Woonsocket, R. I. When I went to the Maverick Mills, the only wool duster they had was one with a cylinder about two feet in diameter and two feet long. This was a slow process, for in front over the feed was a trap door which the tender had to open with one hand and at the same time

push in a feed of wool with his other hand, closing the trap door immediately; after running long enough, another trap would be opened and the dusted wool would be thrown out and the machine would be ready for another feed.

One day Mr. B—— asked me if I knew how they dusted wool at the Harris mills. I told him that I did, for I helped to build the Harris wool duster and knew all the dimensions of the machine, and could make one just like it. He said he wished that I would do so. I went to work, and in a few days' time had one set up and was putting in the teeth when one of the boss carders came in and wanted to know what it was for. I told him it was a wool duster, but he was one of the old timers and condemned it at once, saying,—

"It is no good."

Then some others came in and all had the same story. The mill at that time had three different rooms in which the carding was done, and each room had a different boss carder, which caused a great deal of annoyance in the works at times, especially when the lots went wrong. They all went to Mr. B—— with the story that the thing the new machinist was making would never do. Mr. B—— came to the shop and said to me,—

"I guess you had better stop work on that duster, as the men will not use it."

"Why," I said, "that duster will do more than twenty times the work your old duster will do, but if you want your men to keep on using that old out of date thing, they can do so."

I took my machine apart and stored it away in the left over shop, at times finishing the parts so that it could be set up at any time. There it lay until 1864, when Richard Dewso came to be agent at the mills, after they had been bought by the Merchants Woolen Co. He had been there but a few days, when he asked me why I had not built a wool duster the same as my father had made for the Harris Mill. I told him about the one I had all ready to set up. It was set up and running in a short time, and I think is running to this day. In later years, machine builders from Worcester, and several other places, took the pattern of this old duster and commenced building them for the market.

The way Mr. B—— came to change from gears to belts was in this wise. We had often talked over the difference in our opinions; after getting the large bevel gear going to suit him he quite often would come for me to go to some part of the mills or dyehouse to adjust the gearing, and would say:

"That runs easier," and add the remark "that it took a great deal of power to make a noise."

I said, "Mr. B——, I agree with you in that it does take a good deal of power to drive a noisy pair of gears, but belts do not make much noise."

That was a point in my favor that he never overcame. At one time he wanted to connect the power of No. 1 mill with that of No. 2 mill, which had also been separate; No. 1 was driven by a breast wheel; No. 2 by a wheel connected with the engine, so that in dry time No. 1 had to stand idle. The main shaft in No. 2 was driven by the engine and situated in the basement, while the main shaft of No. 1 was up one flight above. I made my plan to belt through from No. 2 on to a counter shaft in the basement of No. 1, then belt up from the counter to the main shaft on the story above. After Mr. B—— had talked it over with his finishers and others, all agreed with him that it ought to be done with a shaft running from one mill to the other, and then connect it with an upright to the main shaft above, which would take four pair of bevel gears, and some 40 or 50 feet of shafting. Mr. B—— came to me and told me I must do the work by shafting and gearing.

(To be continued.)

—There is no virtue without a combat, none without a victory.—Buffon.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

Spindle Oiler. Struchtemeier & Co., Bielefeld, Germany, are putting on the market a spindle oiler for cotton, woolen and worsted spinning, the invention of P. Hoffman. The revolution of the spindle is utilized to suck the oil from a reservoir to the bearing; when the speed slackens or the spindle stops, the oil flows back into the reservoir. It is claimed that there is no leakage and that a spindle will run four weeks or even longer without reoiling.

Bale Breaker. Dobson & Barlow, Bolton, England, are introducing a new hopper bale breaker, which is claimed to be a great improvement over the former type. It does the work of both the ordinary bale breaker and hopper feeder. The dust is removed by a fan at the delivery end of the machine. It is said that the improved machine will handle a bale of American cotton in from 6 to 12 minutes, and of Egyptian cotton in from 3 to 5 minutes.

Embroidery Device for High Speed Looms. A German has recently placed on the market an embroidering attachment for decorating woven goods as they are woven. It is said to be designed especially for high speed looms.

Yarn Preparing Machine. A Manchester (England) manufacturer has recently brought out an improved machine for preparing cotton yarn in hanks to give it a high lustre and finish. The principal feature is an automatic device by which the time during which the yarn is subjected to the treatment, can be regulated.

Slasher. An English firm has placed on the market a slasher embodying two new features. The first is a ball bearing arrangement applied to the trunnions of the cylinders, whereby the friction is greatly reduced. The second is a patent yarn beam presser consisting of a single iron roller on the expanding principle. As the yarn is wound, the roller expands gradually until it comes in touch with the flanges. It is claimed that the yarn is so evenly pressed by this device that soft sides are entirely absent.

Piece Goods Stitching Machine. Messrs. Wheatley, Kirk, Price & Co., Albert Square, Manchester, Eng., are placing on the market a machine for stitching the ends of pieces in the finishing room. In addition to stitching, this machine trims the edges, and if required stamps each piece with suitable letters or numbers. Printing devices permit the letters being readily changed to suit the requirements of different goods.

Cloth Raising Machine. An English firm is placing on the market a cloth raising machine, which works on a principle different from that of the ordinary napper. The clothing is fastened on six sided rollers. These rollers are vibrated up and down; the downward movement is straight, while the return movement is circular, the whole movement being somewhat in the shape of the letter D. It is claimed that this is nearly the motion of the card when raising the nap by hand. The changes are automatically made from one side of the roller to the next one; while the sides are out of use, they are automatically cleaned.

DYEING DEPARTMENT

Dye Recipes for August.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

Recipe No. 113.

Coronation Red on Woolen Cloth.

Coronation Red A on 100 lbs. woolen cloth.

Prepare the dye bath with

2½ lbs. Coronation Red A.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

20 lbs. Glauber's Salt.

1 lb. Sulphuric Acid.

Enter cold, work 5 minutes, then bring to a boil, boil ½ hour, during which time add

2 lbs. Sulphuric Acid.

Then work ½ hour longer in boiling bath.

Coronation Red A gives a brilliant shade of the red so popular abroad at present.

Recipe No. 114.

Black on Worsted Yarn.

Acid Chrome Black J on 100 lbs. worsted yarn.

Prepare the dye bath with

7 lbs. Acid Chrome Black J.

(Sykes & Street, 85 Water St., New York.)

10 lbs. Glauber's Salt.

4 lbs. Acetic Acid.

Enter at 170° F., bring to a boil; dye at this temperature ½ hour, then add 1 lb. of sulphuric acid and continue the boiling ½ hour longer.

After chrome by adding

1½ lbs. of Potassium Dichromate,

and boiling ½ hour longer.

Acid Chrome Black J, when dyed in this way, gives a color very fast to light and milling. It goes on the fibre slowly, thus preventing unevenness.

Recipe No. 115.

Blue on Cotton Yarn.

Tetrazo Brilliant Blue 6 B on 100 lbs. cotton yarn.

Prepare the dye bath with

1 lb. Tetrazo Brilliant Blue 6 B.

New York and Boston Dyewood Co., 156 William St., New York.

25 lbs. Common Salt.

Enter at 160° F., bring to a boil and dye at a boiling temperature for one hour.

Tetrazo Brilliant Blue 6 B produces a shade of great clearness and brilliancy, and can be made extremely fast to light, and quite fast to washing by a short after treatment.

Recipe No. 116.

Green on Worsted Yarn.

Merino Green No. 5760 on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Merino Green No. 5760.

(Sykes & Street, 85 Water St., New York.)

20 lbs. Glauber's Salt.

Enter at 160° F., bring to a boil and dye at a boil for one hour.

Merino Green No. 5760 gives a very dark shade which possesses good fastness, and may be advantageously used in the dyeing of union goods.

Recipe No. 117.

Black on Worsted Yarn.

Fast Chrome Black I on 100 lbs. worsted yarn.

Prepare the dye bath with

5 lbs. Fast Chrome Black I.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

10 lbs. Glauber's Salt.

1 lb. Acetic Acid.

Enter cold, bring to a boil in the course of an hour, during which time add gradually

4 lbs. Acetic Acid.

Then dye at a boil for ¾ of an hour, exhausting the bath if possible. To facilitate exhaustion of the bath, ½ to 1 lb. of Acetic Acid may be added.

Then chrome for ½ hour in the same bath, to which 1 lb. of Potassium Dichromate has been added.

Fast Chrome Black I produces an excellent black of good fastness.

Recipe No. 118.

Green on Cotton Yarn.

Tokio Green B on 100 lbs. cotton yarn.

Prepare dye bath containing

25 per cent. Salt.

2½ lbs. Azodine.

H. S. Vila, 115 South Second St., Philadelphia, Pa.

Boil for ½ hour; raise cotton and add

10 per cent. Glauber's Salt.

2½ lbs. Tokio Green B.

After color is well dissolved, add some cold water having bath to 140° F., then enter cotton yarn, work for about 15 minutes, then turn steam up to a boil, shut off and work 15 minutes longer until color is even; lift and dry.

This green is very fast to sunlight, and is fairly fast to washing.

Recipe No. 119.

Black on Cotton Yarn.

Tetrazo Black N on 100 lbs. cotton yarn.

Prepare the dye bath with

5 lbs. Tetrazo Black N.

New York and Boston Dyewood Co., 156 William St, New York.

2 lbs. Sal Soda.

25 lbs. Common Salt.

Enter at 170° F., bring to a boil and dye at a boil for one hour.

Tetrazo Black N dyes evenly and possesses very good fastness for a direct cotton black.

Recipe No. 120.

Red on Worsted Yarn.

Chrome Fast Red G on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Chrome Fast Red G.

(Berlin Aniline Works, 72 Front St., New York.)

4 lbs. Acetic Acid.

10 lbs. Glauber's Salt.

Enter at 170° F., bring to a boil and dye at this temperature ¾ hour; then add

4 lbs. Sodium Bisulphate

and boil ½ hour longer.

After treat in a fresh bath with

1½ lbs. Potassium Dichromate.

3 lbs. Acetic Acid.

Chrome Fast Red G produces a deep shade of red, which is very fast to milling, and also reasonably fast to light.

Recipe No. 121.

Red on Worsted Yarn.

Metanil Red 3 B Extra on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Metanil Red 3 B Extra.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter at 150° F., bring slowly to boil and boil until even. Add acid slowly.

Metanil Red 3 B Extra dyes a very brilliant and pure shade of red, and dyes very evenly.

Recipe No. 122.

Black on Worsted Yarn.

Acid Chrome Black 2 B on 100 lbs. worsted yarn.

Prepare the dye bath with

7 lbs. Acid Chrome Black 2 B.

(Sykes & Street, 85 Water St., New York.)

4 lbs. Acetic Acid.

10 lbs. Glauber's Salt.

Enter at 170° F., bring to a boil; dye at this temperature ½ hour, then add

1 lb. Sulphuric Acid

and continue ½ hour longer.

After chrome by adding

1 ½ lbs. Potassium Dichromate

and boiling ½ hour longer.

Acid Chrome Black 2 B when dyed in this way gives a color very fast to

light and milling. It goes on the fibre slowly, thus preventing unevenness.

Recipe No. 123.

Violet on Worsted Yarn.

Benzyle Violet 10 B on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Benzyle Violet 10 B.
(A. Klipstein & Co., 122 Pearl St., New York.)

20 lbs. Glauber's Salt.

3½ lbs. Sulphuric Acid.

Enter at 160° F., bring to a boil and dye at that temperature for one hour.

Benzyle Violet 10 B produces a brilliant shade of violet, and dyes evenly.

Recipe No. 124.

Black on Cotton Yarn.

Oxy Diaminogene O T on 100 lbs. cotton yarn.

Prepare the dye bath with

5 lbs. Oxy Diaminogene O T.
(Cassella Color Co., 182 Front St., New York.)

2 lbs. Soda Ash.

40 lbs. Glauber's Salt.

Dye at a boil for one hour, then develop in a cold bath made up with

4 lbs. Sodium Nitrite,

4 lbs. Sulphuric Acid,

1 lb. Phenylene Diamine,

working in this for 20 minutes.

Oxy Diaminogene O T gives a color very fast to washing, and reasonably fast to all the other light destroying agents.

Recipe No. 125.

Blue Black on Worsted Yarn.

Phenyl Blue Black N on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Phenyl Blue Black N.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Acetic Acid.

Enter at 170° F., bring to a boil and dye at a boiling temperature for one hour.

Phenyl Blue Black N is especially adapted for piece dyeing. It is distinguished for brightness of shade, and fastness to light and milling.

Recipe No. 126.

Red on Worsted Yarn.

Chrome Fast Red R on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Chrome Fast Red R.
(Berlin Aniline Works, 72 Front St., New York.)

10 lbs. Glauber's Salt.

4 lbs. Acetic Acid.

Enter yarn at 170° F., boil ¾ of an hour, then add

4 lbs. Bisulphate of Soda

and boil ½ hour longer.

After treat for ½ hour in a boiling bath made up with

1½ lbs. Potassium Dichromate.

3 lbs. Acetic Acid.

Chrome Fast Red R produces an excellent shade of red which possesses great fastness.

Recipe No. 127.

Black on Cotton Yarn.

Oxy Diaminogene O B on 100 lbs. cotton yarn.

Prepare the dye bath with

5 lbs. Oxy Diaminogene O B.
(Cassella Color Co., 182 Front St., New York.)

2 lbs. Soda Ash.

40 lbs. Glauber's Salt.

Dye at a boil for one hour, then develop in a cold bath made with

4 lbs. Sodium Nitrite,

4 lbs. Sulphuric Acid,

1 lb. Phenylene Diamine,

working in this for 20 minutes.

Oxy Diaminogene O B gives a color very fast to washing and reasonably fast to all the other light destroying agents.

Recipe No. 128.

Red on Worsted Yarn.

Anthracene Red G N on 100 lbs. worsted yarn.

Prepare the dye bath with

5 lbs. Anthracene Red G N.
(C. Bischoff & Co., 87-89 Park Place, New York.)

15 lbs. Glauber's Salt.

4 lbs. Acetic Acid.

Enter at 160° F., bring to a boil and dye at a boiling temperature for one hour.

Anthracene Red G N gives a very desirable and fast shade of red.

The Practical Side of Mercerization.

ROGER WILLIAMS.

Since mercerizing has come into practical use, there have been many articles written on the subject. Column after column, page after page, have been written about Mercer, Thomas & Prevost, Lowe, and many others, about the priority of their processes, and upon the technical side of the subject. In no journal has there been more published than in the Textile World; it has given to its readers from time to time much of the practical, as well as the technical side of this subject down to its very latest and best article, the translation of Paul Gardner's Mercerization of Cotton.

It is not my intention to write anything upon the theoretical side of this theme, but simply to describe how the process is carried out in our own country, for hank, chain and piece goods.

It is well known and needs no repetition here, that the better the yarn or the better the fabric mercerized, the better the lustre, if the process is properly carried out. It was once thought that only Sea Island and Egyptian combed and twisted yarns were susceptible of being mercerized, but this idea has been proved erroneous by experiment, and it has been found that all kinds and conditions of cotton are capable of being lustred by mercerizing, but, of course, in varying degrees.

For the mercerizing of yarn in the hank, there are many machines and also many variations of the process for obtaining the lustre, but we will confine ourselves to the two ways of manipulation that are being carried on in two of the largest plants in the country.

The machines in both cases are much alike; they are, in fact, modifications of the old-fashioned yarn stretching machine, Fig. 1. They are made so that the upper frame of rollers can be raised or lowered at will by means of a screw, which raises both ends of the rods at the same time, so that the stretch on all skeins will be equal.

The rollers in nearly all machines have rounded grooves so that the caustic soda lye can work through.

I will first describe the continuous process for mercerizing yarn. The machine for stretching the yarn is made of phosphor bronze. The yarns, which have been well boiled and extracted, are put on the rolls of the frame. The upper frame and rolls are raised by the means of screws until the yarn has the proper tension, the frame containing the yarn is then raised by a chain fall attached to a trolley, and put into a bath of caustic soda of about 51° Twaddle; it is kept in this bath about twenty to thirty minutes, and the yarn is kept on the move by a slow running belt, which drives a chain of gears.

After being in the soda bath the required time, the frame is raised, and the yarn allowed to drain some minutes, then pushed along this overhead trolley and lowered into the wash box, where it is well washed, and again raised, pushed along and lowered into the souring bath made up with three parts water and one part oil of vitriol; it is allowed to remain in this bath from ten to fifteen minutes, and again raised and washed.

This process requires a frame made of a metal composition that will stand acids; also three boxes, one iron box to contain caustic, one wooden box for washing, which can be cemented or leaded on the inside, and one box leaded on the inside for souring. Fig. 2 will illustrate this method.

By another process of mercerizing skein yarn, and the one I consider the best, the yarn is put on a frame, which is stationary in the caustic soda bath; in this process the machine and mercerizing tub are built of iron.

The well scutched yarn is put on the rollers, the yarn is then stretched

to the proper tension, the caustic soda liquor is let down into the box, and the yarn kept turning on rollers twenty to thirty minutes; the caustic liquor is then run into a storage vat, and the yarn washed in the same box. The yarn is then stripped from the frame, soured and again washed on sticks.

In this process, the caustic is boiled in an iron tank above the stationary frame, and when needed is drawn through iron pipes into the box in which the yarn is on the frame. After mercerizing, the lye is let down into a storage tank and when needed again it is pumped up into the tank and used over and over, so there is no loss of soda, except that which is taken up on yarn. Fig. 3 shows the general arrangement of this process.

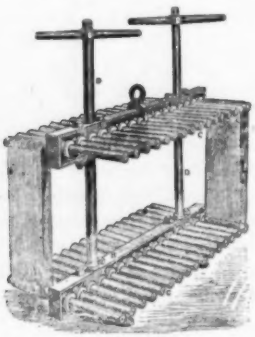


Fig. 3.

Fig. 4 illustrates one of the best machines of this type used in this process. It is the invention of an American dyer, and is in successful use in one of the largest mercerizing plants in the country.

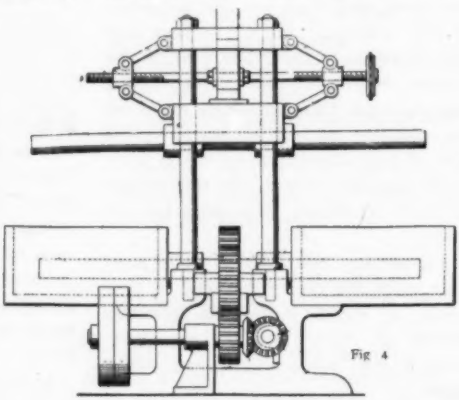


Fig. 4

As a rule the skein yarns are also gassed. This is done on special machines made for this purpose; the yarn is first wound on spools and passes from spool to spool through the flame of a gas jet. This operation burns all the long loose fibres and makes a smoother appearing yarn when it is finished.

Warp yarn is mercerized in the chain in a machine of five or more compartments. The caustic soda is boiled up in tanks placed above the machine, and the caustic soda lye is run into three or four compartments, and running water in the last two compartments. The warps are run slowly through this machine and kept at a good tension. After running through this machine the yarn is soured in another similar machine with sulphuric acid in the first two compartments, and with running water in the last three or four. They are then bleached or dyed as usual.

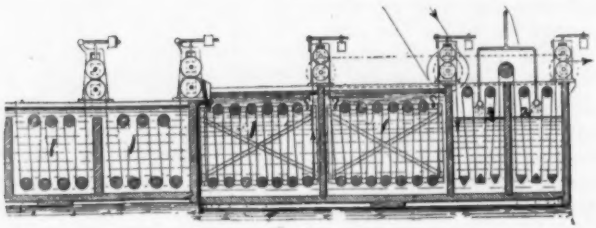


Fig. 5.

The machine for mercerizing can be made out of iron or wood, but iron is much more durable. The machine for souring should have sheet lead linings

and be burnt on, and the rollers should be made of metal, such as brass or bronze. Fig. 5 gives an idea of the warp mercerizing machines:

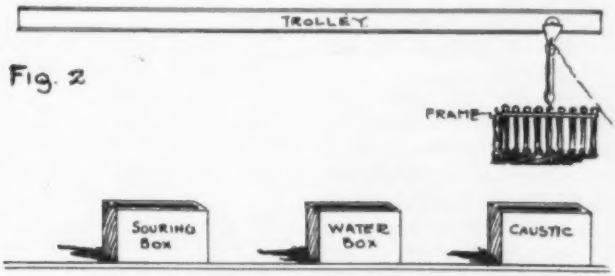


Fig. 2

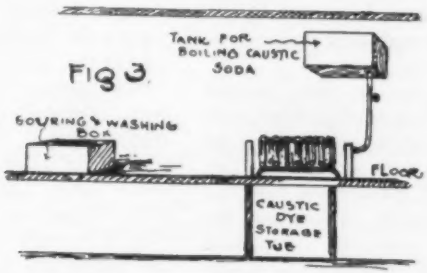


Fig 3.

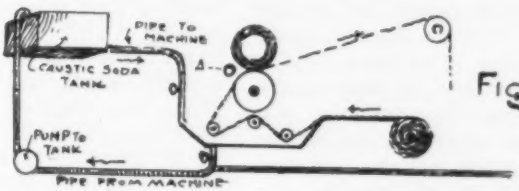
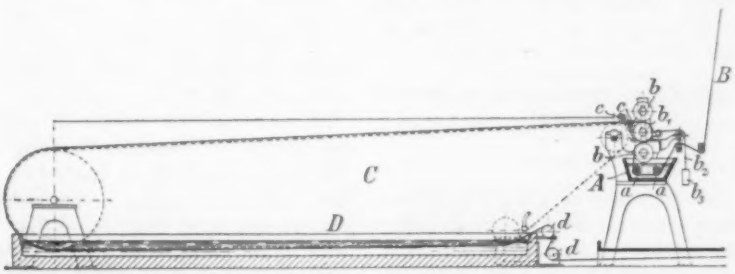


Fig 7

known, consists in running the cloth through the foulard machine, and then through a series of rollers which squeeze in the caustic lye. From this

No. 1-1-1 and 1, are tanks for caustic lye 50 to 60° Twaddle; No. 2-2, are for running water; the tension is obtained by bars on the back of the machine, bath the pieces go directly on a tentering machine, where contraction is prevented, until the goods are washed either by sprinkler pipes or by being



which hold back the warp as required.

There are two methods of mercerizing piece goods. One, which is well passed through a wash box at the end of the tentering machine. They are then soured, and washed in another

machine. Fig. 6 shows the arrangement for this method.

The other process consists in mercerizing in the length and under pressure. For this purpose, some use three rolls, but a method which gives the best results in some of the best mills, is as follows:—

The boiled out, but unbleached goods are run through the caustic lye and wound around the upper rolls of a machine similar to a foulard machine, and during the winding, a high pressure is kept on the rolls. After the pieces have been wound on the top roll, the machine is reversed and the pieces are wound on to the lower or bottom roll, and kept under pressure as before.

The caustic lye is then pumped back into the tank, the box filled with water, and the goods are washed by passing through running water. They are then soured, washed and bleached in the usual manner. Fine goods are extracted and dried on a tentering machine, which enhances the lustre. Fig. 7 shows the arrangement for this process in which the cloth is passing through caustic to the top roll. A is the sprinkler pipe for washing the goods as they come from the roll. This method of mercerizing in the length and under pressure gives good results and is easy of operation.

To get the best results in mercerizing, whether in the skein, warp or in the piece, it is essential to start right, have good cotton, well carded and combed, then properly spun and twisted. In the piece, good finishing does much to enhance the lustre.

Resists Under Steam Colors on Woolen Knit Goods.

BY FOCUS.

Zinc dust acts as a good resist for steam colors on wool. A great many coloring matters are capable of being discolored or destroyed by being reduced in steaming by means of zinc dust, and many also have to be rejected on account of their ready re-oxidation after steaming or exposure to light and air, which revives more or less their original color. Such colors as Methylene Blue, Violet 170, and other, basic colors, show this result.

In white resists, therefore, those colors only can be used which are completely destroyed by reduction, and the colors giving the best results belong to the class of acid colors, such as Panceaux, Ago-orange, etc., those giving the best whites being the acid greens and violets.

A good white resist is composed of:

6 quarts gum Ghatti.

4 quarts water.

4 1/2 lbs. Kaolin or china clay.

4 1/2 lbs. Zinc dust.

This mixture is printed on woolen cloth, chlorine prepared, in any suitable patterns. The cloth is then taken, and padded with any of the above colors, slightly thickened with gum, D'Alsace or Ghatti. After padding, it is dried in a hot air chamber; the goods are then run through a damping machine, and steamed at a pressure of 2 lbs. The fabric is afterwards washed in cold water in an ordinary washing machine and dried. The padding colors are thickened with Gum Ghatti or Gum D'Alsace.

The following colors may be used alone or in combination with each other, following the shades required:

Ponceau V. F. R. Poirrier.

Grenat for printing Poirrier.

Acid Violet T B. Bo. S. F.

Orange T B. Bo. S. F.

Liquid Green T B. Bo. S. F., etc.

To the gum thickening with these colors may be used a little tartaric, or citric acid, say 5 grs. to the litre.

In addition, the resists of colors which are not completely reduced in steaming and which by the action of light, air and washing revive considerably, may give different colored resists, as for instance, blue with indigo, carmine yellow with persian berry or theoflavine, cream or orange with phosphine, pink with ago-carmin, or saffranine, etc.

By these means designs in several colors and padded with dark grounds as previously explained may be printed and very fine effects are thereby produced on the wool.

For the printing of knit goods, it is advisable to dye the woolen fabric, first, in the ground shades desired, such as navy bistre, plum, violet, olive, grenat and black, afterwards printing either on an ordinary cloth printing machine, or on a yarn printing machine. If on the loose woolen yarn, a discharge consisting of:

600 parts of Acetate of Tin 18 Tw.
180 parts wheat starch.
2400 parts White Dextrine.
36 parts Citric Acid.
360 parts Tin salts.
45 parts Acetate of Sodium.

The printed fabric is dried and then subjected to a steaming of twenty minutes at 2 lb. steam pressure in an ordinary steaming box. To remove the Tin Salts left on the printed parts, which might afterwards affect the color, it is advisable to wash the fabric well in cold water and finally dry.

This gives good results on woven knit goods, as these can readily be dyed any shade desired, and patterns printed with this discharge will, after steaming, give a good discharge effect on the particular dye ground printed. In dyeing before printing, the following proportion of dyestuffs give good, full shades. The wool is dyed at boiling point in a slightly alkaline bath, with the addition of Glauber's Salts and Soda.

Navy for 100 lbs. material: 4 lbs. Benzo Chrome Black Blue B. Dye 30 minutes at boil, then top cold with 11 oz. New Victoria Blue B, to which a little acetic acid has been added.

Bistre: 1 lb. 12 oz. Benzo Chrome Black Blue B; 1 lb. 2 oz. Geranine G; 14 oz. Chrsophenine.

Plum: 3 lbs. Benzo Violet R; 1 lb. Direct Rhoduline Red B.

Violet: 1 lb. Methylene Violet 7 B. This dyed only in an acid bath brought to the boil in 30 minutes. A basic discharge paste is required for this dye.

For 100 lbs. material.

Olive: 2 lbs. Benzo Dark Green G G; 1 1/4 oz. Direct Benzo Green B; 4 oz. Chrsophenine.

This brought to the boil, in an alkaline bath, as above described, in 30 minutes.

Grenat: 3 lbs. Benzo Bordeau 6 B; 3 lbs. Benzo Fast Scarlet 4 B; 4 oz. Benzo Chrome Black Blue B.

Black: 5 lbs. Benzo Chrome Blue Black B; 3 lbs. Direct Deep Black R W.

To the white discharge paste given previously any of the above colors may be added to produce colored discharges in the proportions desired, varying, say, from 1 to 3 ozs. per gallon. Colored discharge effects are usually more brilliant upon chlored goods than on unchlored materials, and this brilliancy shows very advantageously, especially in dark dyeings. The preparation with chlorine is, therefore, of advantage, but not absolutely necessary.

The application of the above dyestuffs allows of chloring before dyeing and effects a saving on dyestuffs of about 25 per cent. This chlorine preparation is effected by passing the woolen yarn or cloth through a solution of sulphuric, or hydrochloric acid about 1 to 2 degrees Tw. at a temperature of about 160 to 170 degrees F. and then through a solution of Hypochlorite of Soda at 1 1/2 degrees Tw. washed and dried.

—Friends are made more easily by character than by talent.—C. Bernard.

—Of all our visitors, death is the most announced and the least expected.—P. Bourget.

—A poor chamber is better than a good antechamber.—Cavour.

—Life is like wine; it weakens some and strengthens others.—A. Delvau.

MILL NEWS.

New Mills.

Cotton.

Connecticut, Fairfield. The Bridgeport Elastic Fabric Company has been incorporated with a capital stock of $8,000, for manufacturing webbing. Arthur J. Moore is president of the company, Arthur Liggins treasurer and Samuel Lownds, secretary.

*Georgia, Griffin. Contract has been let for the building of the new Boyd-Mangham Cotton Mills, and work on construction will be started at once.

Georgia, Macon. There is a movement on foot to form a company to build another cotton mill with a capital of $100,000, some of which has already been subscribed.

*Georgia, Poulan. The new mill project reported last week will probably be known as the Poulan Cotton Mills, which will take over an uncompleted building which is partially equipped with a power plant. A new picker room will be built. Capacity of mill will be 5,000 spindles and 150 looms.

Louisiana, Arcadia. There is a cotton mill scheme on foot here, and $25,000 or $30,000 has been reported subscribed.

Massachusetts Brockton. The Brockton Webbing Company has completed work on their new factory building and commenced moving in. Operations will be started as soon as all the machinery has been set up.

*Massachusetts, Fall River. Work on the foundation for the new Davis Mill has been begun.

*Massachusetts, Fall River. The new mill of the Stevens Mfg. Co. is well under way. The new plant comprises three large buildings, in one of which is located preparatory carding and spinning machinery, another is the weaving mill (one story), and the third building is the bleach house. There is a separate new power building.

*Massachusetts, Springfield. The enterprise which was reported in March from Westfield, Mass., in which E. L. Smith was interested, will be located in this place. The Alden mill property on Mill street, recently operatd by the Standard Thread Co., is being remodeled, and it is reported that the company will be capitalized at $100,000. New water wheels and power transmission machinery are now being installed, and it is reported that much new thread-making and finishing machinery will be purchased. A small addition will be made to the dye-house.

*Mississippi, Aberdeen. At a recent meeting of the stockholders of the new Aberdeen Mills Co., it was announced that $170,000 worth of stock out of total capital of $200,000, was subscribed. $115,000 worth of stock was to be subscribed by the citizens of Aberdeen, and there yet remained $30,000 to be taken, but this was pledged at the meeting, so that the mill is now assured. B. P. Holliday was elected president and W. M. Stokes secretary and treasurer. A committee was appointed to secure a suitable site for the mill and this matter will be decided by July 14th, and the officials are also instructed to secure engineers' plans and take other necessary steps. It was originally proposed to build a mill of 10,000 spindles and 350 looms to make coarse sheetings, but the class of goods has not yet been definitely settled and will not be until the July meeting of the Board of Directors.

*Missouri, Kansas City. The proposed cotton mill at this place is heralded as the biggest in the world, with a capital stock of $10,000,000, an equipment of about 500,000 spindles and 12,000 looms. If the project will materialize, it will doubtless be on a smaller scale. We have mentioned this project before.

*Pennsylvania, Glen Riddle. The Penn Tapestry Company, which was recently reported to start operations soon at Rockdale, will be located at this place and will start running about August 15th. Company is capitalized at $50,000. Joseph S. MacElroy is president and treasurer of the company. They will operate 23 looms, making upholstery fabrics, using water power. Chas. B. Young will sell the goods.

*Pennsylvania, Norristown. Operations are being started by the Wyoming Spinning Co., recently incorporated with capital stock of $60,000, for manufacturing cotton yarns. John J. Dyer is president and treasurer of the company and W. T. Robertson, superintendent. Mill is equipped with 5,000 ring spindles and has dye house attached. Water power is used. Will sell direct.

*South Carolina, Anderson. Work will begin at once on construction of the Brogon Cotton Mills, arrangements having been completed for all the contracts. This mill is to have an equipment of 20,000 spindles and 700 looms. Robt. E. Ligon is treasurer of the company.

*South Carolina, Anderson. Operations are expected to start about September 15th, by the Townsend Cotton Mill Co., recently incorporated with capital stock of $25,000, to manufacture yarn for wrapping twine. H. C. Townsend is president of the new concern and N. J. Townsend, treasurer. They will operate 2,000 ring spindles, using electric power.

*South Carolina, Greer Depot. Work will be started about August 1st on construction of the new buildings for the Apalache Mills, recently incorporated with capital stock of $350,000. Lewis W. Parker is president and treasurer of the company, which will manufacture dobby work in yarns from 40 to 60s. The plant will be equipped with 17,000 ring spindles and 420 looms and operated by water power. Woodward, Baldwin & Co. will probably be selected to sell the goods, which they propose having on the market by July 1st, 1903.

*South Carolina, Honeapath. Work is progressing on the construction of the Chiquola Cotton Mills, which are expected to be in operation by next January.

*South Carolina, Newberry. The Mollohon Mfg. Co. is about ready to begin operations. This mill is capitalized at $200,000, and equipped with 11,000 spindles and 300 looms for making fancy white goods.

*South Carolina, Ninety-Six. Contracts have been completed for the erection of buildings and necessary machinery for the new plant of the Ninety-Six Cotton Mills. 10,000 spindles and 280 looms will be put in for manufacturing fine sheeting. The company has a capital stock of $200,000.

*South Carolina, Spartanburg. Work has been started on construction of the new Drayton Cotton Mills. The main building will be 15 by 205 feet, three stories. A power house, 106 by 67 feet, will also be built. A. B. Calvert will be president of the company.

*South Carolina, Spartanburg. H. A. Ligon confirms our report of the new mill proect at this place. He will be president and treasurer of the new company, incorporated with $200,000 capital. They propose to build a 10,000 spindle mill near this town; work to be begun veery soon. He advises us that the stock is nearly all subscribed.

*South Carolina, Spartanburg. The new cotton mill to be built here and in which H. A. Ligon is interested, will be known as the Arcadia Mills.

*Tennessee, Knoxville. The new mill to be built by the Brookside Mills will be equipped with nearly 90,000 spindles instead of 27,000, as was first proposed. They will also erect 300 new cottages for the operatives.

Texas, Pilot Point. Citizens of this place have subscribed $50,000 toward a cotton mill and a committee are looking up the matter and inspecting mills in that section.

*Texas, Weatherford. The Weatherford Cotton Mills Co., of which W. S. Fant is president, have purchased the machinery of the Mammoth Springs Cotton Mills, Mammoth Springs, Ark. They will also purchase several thousand dollars' worth of new machinery. The old Parker County roller mill will be used, with one new building to be erected and upon which work will soon start. It is expected to have the mill in operation by December.

Enlargements and Improvements.

Alabama, Talladega. The Highland City Cotton Mills, manufacturing hosiery yarns and operating about 5,376 spindles, will expend about $6,0000 in improvements.

*Arkansas, Helena. The Premier Cotton Mills are installing new machinery in the plant. Some new cards have just been received.

*Connecticut, Middletown. The Arrowanna Mills, which have been making numerous additions to their plant, have installed 60 new looms, four cards and a pair of spinning frames. They are also building a new storehouse. The production in the spinning department has been increased from 8,000 to 15,000 pounds a week.

Connecticut, Moodus. An addition is being built to Purple's mill, in which spinning and twisting machinery will be installed.

*Georgia, Canton. The Canton Cotton Mills, which were previously reported to install more looms in the mill, expect to begin operations about the latter part of August or 1st of September, manufacturing blue denims. They are adding 50 looms and will put in a dye plant for raw stock. The carding and spinning department will be run with a day and night shift.

*Georgia, Columbus. The Columbus Mfg. Co. received the last of the machinery originally planned to bring their total equipment up to 25,000 spindles.

*Georgia, Covington. The Covington Cotton Mills have completed the addition to their plant, in which 5,000 more spindles and 142 looms have been aded.

Maine, Saco. The York Mfg. Co. are making important changes in their power and transmission plant and installing independent electric motors in many of the different rooms. They are also putting in some machinery, including automatic looms. An engine of 2200 H.P. is to be installed.

*Maine, Westbrook. Construction on the addition to the Dana Warp Mills is well under way.

*Massachusetts, Adams. The Berkshire Cotton Company, which is adding new looms to the plant, have already started up 22, and will push work on the installation of others, to increase the number installed to 150.

*Massachusetts, Adams. The Renfrew Manufacturing Company, previously reported to instal additional looms in the Jacquard mill, have received 34 looms, which will be set up at once. They will add a total of 100.

Massachusetts, Manchaug. The Manchaug Mills have installed eight new looms in the plant.

*Massachusetts, New Bedford. The capital stock of the Soule Mill has been increased by $150,000.

Massachusetts, Pittsfield. J. L. & T. D. Peck Mfg. Co. will build an extension, which will be equipped with machinery for the manufacture of insulating thread. A new brick factory, 50 by 100, two stories high, will be built, together with machinery, at a cost of about $50,000.

Mississippi, McComb City. The McComb City Cotton Mills are to install 1,000 additional ring spindles and 40 looms in the mill. This will give them a total of 6,000 spindles and 220 looms when completed.

Mississippi, Tupelo. The new dye plant recently added to the Tupelo Cotton Mills has been put in operation.

New Hampshire, Claremont. The Monadnock Mills Co. will build a bleachery.

New Hampshire, Greenville. The Columbian Manufacturing Company has closed the No. 1 mill and will remodel the same, installing new machinery. They will operate the No. 6 carding room nights until No. 1 mill is ready to resume operations.

New Hampshire, Meredith. The Atlas Linen Co. will install a bleaching plant and do their own bleaching hereafter.

*North Carolina, Hillsboro. The new looms to be installed in the Eno Cotton Mills will be dobby looms.

North Carolina, Monbo. The Monbo Manufacturing Company will increase the capital stock from $50,000 to $60,000, the increase to be used for adding new machinery, viz.: Revolving flat cards, drawing, feeders, spinning frames, contract for which has been placed with the Saco & Pettee Machine Works.

North Carolina, Swepsonville. The Virginia Cotton Mills contemplate making improvements to the plant, about doubling the present equipment, which consists of 7000 spindles and 300 looms.

Pennsylvania, Germantown. The Germantown Spinning Co. will enlarge their plant.

Pennsylvania, Philadelphia. Henry Schadewald has recently started manufacture of hair cloth, hair seating, etc., operating 57 looms on that class of work, in addition to the regular line.

*Rhode Island, Providence. The Lawton Spinning Company advises us that removal of the Providence plant to Woonsocket is merely to consolidate the two mills and thereby save more or less expense and not on account of inability to compete, as was reported. The machinery from the Olneyville plant will be run on carded work, while the machinery now at Woonsocket will be run as usual on combed work.

*South Carolina, Easley. The Easley Cotton Mills, reported to install additional machinery in the plant, will add 16,440 spindles and 380 looms to their present equipment of 11,648 ring spindles and 320 looms. They expect to have the new addition in operation by October 1st.

*South Carolina, Gaffney. The Limestone Mills write us that although they expect to enlarge the plant nothing will be done this year.

South Carolina, Greenville. A special meeting will be held July 24th by the directors of the American Spinning Company, to consider project of increasing the capital stock from $350,000 to $600,000 and enlarging the plant. Company now operates 21,000 ring spindles and 352 looms on sheetings and drills.

South Carolina, Union. At a recent meeting of the directors of the Monarch Cotton Mills, it was voted to increase the capital stock to $500,000. A semi-annual dividend of 3 per cent. was declared.

*South Carolina, Walterboro. The Colleton Cotton Mills expect to have their new addition, on which previous report has been made, completed about August 10. The roof will soon be put on the building, and then the machinery will be installed.

Mills Starting Up.

*Massachusetts, New Bedford. The spinning department of the Soule Mills is running complete. About 600 of the looms are also now in operation. It is expected that all departments will be running in full in another month.

*South Carolina, Inman. The Inman Cotton Mills expect to begin operations about August 1st.

*South Carolina, Williamston. Operations have been started in the Williamston Cotton Mills.

Mills Shutting Down.

Georgia, Harmony Grove. Operations have been discontinued in the Harmony Grove Cotton Mills, so that the new machinery may be placed in position and work proceed on building the second story to the old building. It is hoped that they will resume work in September.

Maine, Gardiner. Wm. Harvey & Sons, operating the Gardiner Shoddy Mills, have retired from business in this place, as a suitable building cannot be found for the business. They have been occupying the W. H. Moore factory.

Massachusetts, Fall River. The Chace Mills will be closed next week for four weeks, during which time a pair of new engines will be put in and other general repairs made to the plant.

Massachusetts, Salem. The Naumkeag Mills are closed during the present week, during which time necessary repairs are being made.

North Carolina, Charlotte. The Ada Mfg. Co. has shut down until September. It is reported that a number of yarn mills in this vicinity will close a number of weeks during the summer months.

Rhode Island, Woonsocket. Considerable damage was done to the Eagle Mills at this place by a severe boiler explosion, which caused the death of the night watchman and did much damage to that part of the plant. The mill will be shut down for a considerable time until the damage can be repaired.

Rhode Island, Woonsocket. The Ray Mill, which has been operated by A. F. Knight for a number of years, has shut down, and will not be operated again by Mr. Knight, as he has purchased the mill at Farnumsville, previously reported, and will remove to that place, lease of the Ray Mill having expired the 1st of July.

Woolen.

New Mills.

*Maine, Waterville. The new dam for the Chase Woolen Co., is completed, and foundation to the mill is being pushed forward.

*New Hampshire, Wolfeboro. The new

woolen mill to be established here is to be known as the Bay Side Woolen Co.

*Illinois, Joliet. F. K. Stevens, previously reported contemplating removal of yarn machinery to another location from Chicago, where he previously operated a plant, is to build a mill at this place which will furnish employment for about 100 people. Two one-story buildings will be erected, the main one to be 150 by 126 feet, equipped with all modern conveniences. Warehouse, dyehouse, wool scouring room and boiler and engine rooms will be erected in the rear.

*Maine, Oakland. Some looms have been set up in the Oakland Woolen Company's new mill and samples being made. The plant will be in full operation by September 1st.

New York, Middleville. The Nelson-Dedicke Felt Company has been organized recently, with capital stock of $100,000, for purpose of manufacturing felt. They propose taking the Nelson Knitting Company's plant for the purpose, remodelling same and making other improvements. Edward Nelson is president of the concern; Edward Dedicke, vice-president; Arnold Nelson, secretary and Edmund Dreuslke, superintendent.

*Ohio, Ashtabula. The Ashtabula Worsted Mills expect to have their new plant in operation about Oct. 15. They will install but 50 broad looms at first. A building, 58 by 105 feet, three stories, brick, has been erected for the carding and combing departments and offices; a dyehouse, 100 by 40 feet, one story; boiler and engine house, 50 by 56 feet, two stories, with machine shop on the second floor, and one 56 by 100 feet, two stories and basement, for weaving and spinning.

*Oklahoma Territory, Oklahoma City. The machinery is being placed in the woolen mills and the plant will probably be put in operation August 1st.

*Pennsylvania, Philadelphia. The machinery of the Glenham Mills, recently reported purchased by Thomas Develon's Sons, will be installed in a new mill at Nineteenth street and Allegheny avenue. This concern will be entirely separate from that of Thomas Develon's Sons, and will be known as the Wilton & Brussels Carpet Co., Thos. Develon, Jr., proprietor. A. E. Schmidt will be manager of the plant. The mill will be equipped with all the latest improved machinery for manufacturing Wilton & Brussels carpet and rugs of all sizes.

*Washington, Seattle. The Australian-American Woolen Co. has been incorporated with capital stock of $500,000. R. A. Alley is president; Henry Hewitt, Jr., vice-president; Thomas B. Wallace, secretary and Chester Thorne, treasurer.

Enlargements and Improvements.

*Canada, Cape St. Ignace. Methot & Frere have begun rebuilding their mill, recently damaged by fire, and expect to start operations in about four months. They will install four additional new looms, one set of cards and 360 spindles. They make yarn and cloth of all kinds. When completed, they will have two sets of cards and eight looms. A dyehouse is attached to the mill.

Connecticut, Glenville. The American Felt Company has recently added 20 new looms to the mill and a new dressing frame.

Connecticut, Mystic. The mystic Mfg. Co., of which E. Gledhill is the superintendent and manager, has broken ground for an additional 25x100, two stories.

Connecticut, Stafford Springs. Plans are being prepared by the Central Woolen Co. for remodeling and enlarging the boiler and dyeing equipment. A new boiler house is to be built and a new 15 h. p. boiler is to be added to the steam plant. The space now occupied by the boilers will be equipped for dyeing purposes, in addition to their present facilities.

*Maine, Pittsfield. Work has been completed on foundations for the Pioneer Woolen Mills' new addition, and work started on the addition between the main mill and picker house.

Maine, Waterville. The Riverview Worsted Mills have decided to build an addition, 110 by 90 feet, two stories, to the plant. They will use the lower floor for stock and install from 20 to 30 looms on the second floor. Work will start at once on construction of the building.

Massachusetts, Cherry Valley. A new weave shed, one story, is to be erected by A. W. Darling, operating a woolen mill at this place. A number of new looms will be installed.

Massachusetts, Franklin. The Singleton Worsted Co. have started work on their new dye house and other improvements which they will make this summer.

*Massachusetts, Lowell. The Bigelow Carpet Co. has under consideration the erection of a new building near their Lowell mills, which will give them increased manufacturing and storage facilities for their rug department. Plans are now being drawn for the new structure, which will cost in the vicinity of $200,000. They will build on land that they already own.

Massachusetts, North Oxford. The Thayer Woolen Co. will install two new sets of cards in the Rhodes Mill.

*New Hampshire, Peterboro. A bleach house, about 22 by 32 feet, brick, is under construction for Joseph Moore's Sons Co.

New York, Lestershire. The Faatz Felting Company is reported to enlarge the plant.

Ohio, Zanesville. The Zanesville Woolen Mills have added several more blanket looms to the mill equipment.

Pennsylvania, Carlisle. Stephens & Beetem are building an addition to their carpet mill.

Rhode Island, Providence. The Lafayette Worsted Company has had work started in a basement under the present building, to be used for storeroom and packing room. The entire first floor, with exception of space used for offices, will be used for installation of knitting machines, which will be put in when new

addition is completed. They are also building a dyehouse, 100 by 60 feet, in the rear of the main plant, on the Drown Street side. Both additions are expected to be completed early in the fall.

*Rhode Island, Woonsocket. Work has been completed on the new boiler house for the Lippitt Mill and the boilers have been started up. When the new belt or rope drive has been received they will be ready for actual operations.

*Vermont, Winooski. Work is nearing completion on the new building being erected for the American Woolen Company, and which is to be used for weaving and dressing cloth. The plant formerly known as the Colchester Mill is running with a night and day force, on carding and spinning.

Virginia, Norfolk. The Norfolk Mfg. & Spinning Co. will build a new mill, 160 by 40 feet, two stories, brick. They contemplate moving the carbonizing plant to the new building when completed. A new six-foot boiler, with a 200 h. p. engine, will replace the old engine.

Mills Starting Up.

*Delaware, Wilmington. Operations have been started by Hodgson Bros., formerly at Camden, N. J., in the Walker Mill. The plant is not yet running full, but additional machinery is being installed and operatives given work as needed.

*Ohio, Cleveland. The National Woolen Co., successors to The F. Muhlhauser Co., will have a capital stock of $750,000. They operate 62 sets of cards and 32 rag pickers. N. I. Drayfoos of the old company is the president and buyer and will probably be the active manager. Mr. Glenber will be the superintendent.

*Oregon, Eugene. The Williamette Woolen Mfg. Co., which we reported in January and February, has started up.

Pennsylvania, Philadelphia. Spink & Baltz have started up a new carpet yarn plant at Manayunk.

Mills Shutting Down.

Indiana, New Albany. The New Albany Woolen Mill and probably the New Albany Hosiery Mills and Hosiery Dye Works will be obliged to shut down for a considerable time through unsuitable water supply.

New York, Stapleton. The Richmond Mfg. Co., at this place, have shut down their plant for several weeks.

Pennsylvania, Lenni Mills. Wm. Carson & Son have shut down their mills at this place. It is not known when they will start again.

Knit.

New Mills.

*Connecticut, New Haven. The Winona Mills of New York City will soon have their branch mill at this place ready for operations. They have leased quarters at 17 Wooster Street.

Georgia, Atlanta. The Milmow Hosiery Company has recently started operations making cotton seamless hosiery. Plant is located on Marietta Street and is equipped with ten knitting machines. J. Milmow, S. A. Shelton and V. Milmow are interested.

*Michigan, Dearborn. The new company in which William Houseman was reported interested, is the Arna Mills, capitalized at $20,000. They expect to begin operations about August 1st, making astrachan cloth coats and imitation Buffalo cloth. Plant will be equipped with 42 spindles, four knitting machines and six sewing machines. A dyehouse will be attached. Will use steam power. Goods will be sold direct. John H. Cutting is president of the company, H. Kalmbach, secretary and treasurer and William Houseman, superintendent.

*New York, Brooklyn. Work will begin shortly on the construction of the new mill to be erected corner of Rutledge street and Wythe avenue, for the American Knit Goods Manufacturing Co., recently incorporated. The new building will be seven stories high. This company has purchased the plant of Baron-Straus & Co., and also absorbed the Brooklyn Knitting Co. Men's underwear, bathing suits and general knit goods will be made.

*New York, Depew. The Depew Knitting Co. will start operations about the 14th of this month in their new mill, making woolen, cotton and cashmere ladies' and men's hosiery. The company has a capital stock of $300,000, with Franklin Buell, president; G. W. Hammond, treasurer, and Joseph Stead, superintendent. The company will have a dyehouse attached to the plant. The goods will be sold direct. Steam power will be in use.

*New York, New Hartford. The Maxwell Mfg. Co. has not yet begun operations in the plant formerly run by Armstrong & Baker. Before doing so, they will install more machinery.

North Carolina, Durham. A chamber of commerce has been formed at this place for the purpose of promoting and assisting new industrial interprises. At the first meeting, a committee, consisting of Dr. N. M. Johnson and A. E. Lloyd, was appointed to correspond with a Mr. Grant of New York relative to the location of a large knitting mill. A site for this plant was offered and probably other inducements will be made.

*Pennsylvania, Duryea. Work has commenced on the construction of the new Duryea Knitting Mills, reported in April.

Pennsylvania, Harrisburg. The knitting machines have been received for the Newport Hosiery Co.'s mill, and will soon be in place. Electricity will be used in the plant,

Pennsylvania, Lewisburg. The Quaker Cuff Co., Ltd., is a new concern which has recently started up to make negligee shirts and also to manufacture ribbed underwear, starting with 10 body machines and two sleevers. The firm is composed of H. Bowles and Messrs. John and George Blood.

Pennsylvania, Philadelphia. A new company has recently started operations

at 2627 Mutter Street, manufacturing silk hosiery. Concern is known as The International Hosiery Co.

*Pennsylvania, Pottsville. J. C. Adcock & Bro. expect to have their new hosiery mill, for making seamless cotton hosiery, in operation about the middle of August.

*Pennsylvania, Reading. The Mt. Penn Knitting Co. has started up their new plant. This company is capitalized at $40,000. Dr. J. J. Hoffman is president; John S. Wagner, treasurer, and Charles Wiest, superintendent. They make ladies' underwear, sizes 4, 5 and 6, operating five knitting machines. The plant is operated by steam. The goods are sold by Geo. C. Hughes. They will add six more machines, which have already been ordered.

*South Carolina, Anderson. A site has been selected for the new Corona Hosiery Mills. Work on the buildings will be commenced as soon as materials can be secured, and it is hoped to have the mill in operation in the autumn.

South Carolina, Lowndesville. E. R. Horton is asking for information about knitting machinery with a view of starting a mill.

*Tennessee, Knoxville. Plans are nearly completed for the new knitting mill to be erected by the Knoxville Knitting Mills, recently obliged to remove to other quarters. The building will be 80 by 80 feet, three stories high. It is thought the capacity will be double that of the old plant.

Tennessee, Knoxville. The Biddle Manufacturing Company is now operating a plant here, making ladies' jerseys. Plant has an equipment of ten knitting machines, formerly used by the Cumberland Knitting Mills, which were burned. W. P. Biddle of the firm, was formerly connected with the Standard Knitting Mills.

Tennessee, Niota. A building is under construction for the Crescent Hosiery Mill, which has been recently incorporated with a capital stock of $125,000, to manufacture misses' cotton hosiery. H. M. Wilson is president of the company and W. L. Forrest treasurer. Sixteen knitting machines and sixteen ribbers will be installed. They expect to start operations in August.

*Texas, Hillsboro. Operations have been started by the Hillsboro Hosiery Mills, running six machines.

Texas, Waco. The new Waco Knitting Mill Co. expects to be in operation by the 1st of August. Machinery is on the way.

*Wisconsin, Menasha. The Fox River Valley Knitting Co., who are to locate their plant at this point, formerly at Appleton, have filed new articles of incorporation. Capital stock has been increased from $8,000 to $50,000. Cornelius Madison is the president and Herbert L. Markham the vice-president.

Enlargements and Improvements

Connecticut, New Haven. The Whiteknit Mills have been closed for the purpose of making repairs to the engine. A new hosiery press and eight new knitting machines are also being installed. It is proposed to double the capacity of the plant in the near future.

Connecticut, Winsted. The New England Knitting Co. has had plans prepared for the erection of an addition to their plant. They propose building one story to the picker and engine room and another to the storeroom, both these to be brick. A new chimney to accommodate the new 250 h. p. boiler, which is to be installed, is also to be built.

*Georgia, Rossville. Work is progressing rapidly on the new addition for the Richmond Hosiery Mills, and it is expected that the building will be ready for occupancy in a few weeks. The present capacity of the mill will be almost doubled.

*Georgia, Rossville. A large addition is under construction for the Richmond Hosiery Mills. They are also building a new dyehouse, three times the size of the present building.

Maryland, Hagerstown. The knitting mills of J. C. Roulette & Co. are being enlarged to a considerable extent. Improvements will be completed about August 1st.

Michigan, Detroit. Forrester & Cheney Co., a new concern which recently started in the manufacture of gloves and mittens in rented quarters at State and Rowland Sts., are now having plans made for a new factory, 50 by 130, four stories. Architects Pollmar & Ropes are drawing plans.

New York, Athens. The Athens Knitting Co. have let contract for an extension to their plant, which will increase their productive capacity 150 dozen per day.

New York, Brooklyn. Ernst Seifert has removed his glove factory to 240 Bradford street, where a new building has been erected.

*New York, Sidney. The Clark Textile Co. will start work this week in the new addition built. They have put in 160 new spindles and 8 weaving machines.

New York, Troy. The Barnet & Aufsesser Knitting Co. has certified increase of capital stock from $50,000 to $125,000.

*North Carolina, Salisbury. We learn that the Salisbury Hosiery Mills are installing 60 machines, instead of 50. They are making women's fleeced hosiery. This gives them a total capacity now of 90 machines.

*Pennsylvania, Annville. A. R. Kreider & Bro. confirm our recent report of the purchase of the Tulpehocken Knitting Mill, which will be removed to Annville, giving them a plant with a total capacity of 57 knitting machines and 10 sewing machines on men's fine gauge silk half hose and misses' hose.

Pennsylvania, Auburn. An addition is being built to the Auburn Knitting Mills.

Pennsylvania, Centreport. The Centreport Knitting Mills have completed construction of addition to the plant. Later on they will add more machinery. The

mill now operates 15 knitting and 20 sewing machines on ladies' underwear.

*Pennsylvania, Hamburg. Work is progressing on the Hamburg Knitting Mills, which contemplate being ready to start operations for fall trade.

Pennsylvania, Philadelphia. A one-story addition is to be built to A. Boyle & Bros.' mill.

Pennsylvania, Philadelphia. A four-story addition, 40 by 144 feet, brick, of slow-burning mill construction, is to be built to E. Sutro & Son's hosiery mill, north of Clearfield Street, between Thompson and Edgemont Streets. An additional story will also be constructed to the present two-story mill building.

Pennsylvania, Robesonia. Leinbach & High have made a small addition to their plant, and are installing some new machinery, including embroidery machinery.

Pennsylvania, Shamokin. William F. Taubel, who started up a branch mill at this place in February, is reported as about to build a four-story mill.

*Rhode Island, Central Falls. The Blackstone Stocking Co., Pawtucket, will remove to the building purchased about November.

Tennessee, Athens. R. J. Fisher's knitting mill is shut down while extensive improvements are being made.

Tennessee, Chattanooga. The Richmond Hosiery Mills will build an extensive addition.

Virginia, Berkley. The Berkley Knitting Mills are to expend about $12,000 making improvements to the plant. An addition, 40 by 75 feet, two stories, will be built and 15 knitting machines, with complement of sewing machines, installed. This will increase the capacity of the plant to about 700 dozen daily. They have already installed a 60 h. p. steam plant.

Virginia, Norfolk. The Norfolk Knitting Mills, C. Brooks Johnston proprietor, have been closed for two weeks, during which time changes will be made and new machinery installed. The capacity of the plant will be greatly increased.

Virginia, Portsmouth. The Piedmont Manufacturing Company will start operating the plant night and day, from August 1st, increasing the output from 300 dozen garments a day to 400 in twenty-four hours.

Mills Starting Up.

Connecticut, New Britain. Operations have been started in all the departments of the New Britain Knitting Company's mill, which has been closed since July 3d. Some improvements have been made in the machinery.

*New York, Amsterdam. John K. Stewart advises us that he will operate the Globe knitting mill property, recently purchased, but has not yet determined on the class of goods. Product will be sold direct through New York office, 51 Leonard St.

New York, Fonda. The knitting mill at this place formerly operated by Cayadutta Knitting Co. has been purchased by a new company in which Titus Sheard and Frank Senior of Little Falls, Charles Stewart of Gloversville and others are interested. Capital stock, $60,000. The mill will be started up about the 1st of September, and will make glove linings.

*New York, Fort Plain. The Fort Plain Hosiery Co. has started work in their new plant.

*New York, Mechanicville. Operations have been started in the Sagamore Mills, recently secured by the Union Mills of Hudson, N. Y. John Pack is superintendent of the plant.

*New York, New Hartford. The new company previously reported formed to operate the plant formerly run by Armstrong & Baker, is the Maxwell Manufacturing Company. John C. Fulmer is president; William S. Maxwell, vice-president and manager, and Charles A. Evans, secretary and treasurer. William H. Cloher, Jr., is one of the directors. The capital stock is placed at $25,000. They expect to begin operations July 15th.

*New York, Prospect. David France's new knitting mill has commenced operations with a few hands. They manufacture sweaters and specialties.

Mills Shutting Down.

New York, Canastota. E. E. Randall has abandoned the manufacture of hosiery at this place because of the difficulty in getting the right kind of help. He will probably remove to Hazelton, Pa.

Silk.

New Mills.

Massachusetts, Fall River. Arrangements are being made by the American Printing Co., to discontinue operations for a time, in order to install new engines and a battery of ten large boilers in the plant. They are now installing ten new printing machines.

*Massachusetts, Fitchburg. Cornforth & Marx, who have leased the Fitchburg Mfg. Co.'s plant, will commence operations for the present with only part of the machinery and later install the full complement of 170 looms. They make tie silks.

*New Jersey, Jamesburg. The new silk mill at this place has been started up. It is owned by the improvement company of the town, and will be operated by Westerhoff Bros. & Napier, whose main office is at Paterson.

New Jersey, Sussex. Edward Sargent, operating a mill at Paterson, N. J., making tie silks, will start up a plant at this place, occupying the old Ewald Shoe Factory.

New York, Canisteo. Negotiations are in progress with the view of establishing a silk mill at this place. E. S. Brown, a silk manufacturer of Hornellsville, N. Y., is among interested parties, and will probably have the management of the mill.

*New York, Ogdensburg. Work has been started on the construction of the new silk mill.

*New York, Rochester. Operations will be started about July 10th in the new plant under construction here for the Rochester Silk Facing Works, B. Hill Smith, proprietor. The plant will be equipped with three looms for making silk top facings for ladies' shoes and silk labels. Electricity will be used. The goods are to be sold direct.

Pennsylvania, Lansdown. A plant is being established at this place for the manufacture of the new artificial silk Sternoil, patents for which are controlled by The General Artificial Silk Co. There will be an output of about 1,000 lbs. per day.

Rhode Island, Pawtucket. The Stewart Manufacturing Company is a new concern which will occupy rooms formerly held by the Pawtucket Boys' Club on East Avenue, for manufacturing chiffon. Operations will start with 20 looms about the last of this month.

Enlargements and Improvements.

Massachusetts, Pittsfield. A. H. Rice & Co. have resumed operations in the mill, which has been shut down for repairs and inventory. A new engine (100 h. p.) has been installed in the brick power house recently built. Hereafter the company will do its own lighting, a dynamo with a capacity of 3,000 incandescents, having been added.

New York, Oneonta. The Paragon Silk Co. will make an enlargement to their plant at this place, giving employment to about 100 additional operatives. They make broad silks.

Mills Starting Up.

New Jersey, Paterson. The strike of the dyers' helpers has been declared off, and more men have applied for work than can be given employment.

New Jersey, Jersey City. The strike of the silk weavers in Hudson Co. is practically ended, and most of the mills are running again full time.

*Pennsylvania, Hallstead. The Miesch Mfg. Co., which will operate the Hallstead Silk Mills, which have been idle for some time, expects to begin production about July 15th. They will make thrown silk and ribbons. This will be a branch of their Paterson mill. 3500 spindles and 31 looms.

Miscellaneous.

New Mills.

*Maine, Newport. J. H. Weymouth & Co. inform us that their new wool pullery will be 42 by 75, two stories, with basement, and annex and boiler house, all connected. They expect to have it finished by the 1st of October.

New York, Binghamton. The Board of Trade at this place are in negotiations with J. S. Lesser of D. S. Lesser & Co., 511 Broadway, New York, regarding the location of proposed lace factory at that place.

New York, Jamestown. Geo. W. Rolland now operates a plant here, making Turkish and huck towels.

Pennsylvania, Philadelphia. The Freeman Bleaching Co. is a new concern which started operations corner of Potter and Huntingdon Sts., Kensington. Morris Freeman, Squire Thornley and James Thornley, all of whom have previously been overseers with the Quaker City Dye Works, are the parties interested. They are equipped to bleach yarns, tapes and piece goods.

Virginia, Petersburg. Werres & Hinton are building a new dye house at this place for job dyeing.

Enlargements and Improvements.

*New Hampshire, Meredith. Work is progressing on the new bleachery being established here by the Atlas Linen Co. A large part of the machinery is expected shortly.

Ontario, Peterboro. The plant of the Canadian Cordage Co. is to be largely increased in the fall.

Pennsylvania, Philadelphia. The Peerless Silk Dye Works have let a contract for the erection of a new boiler house, 20 by 37 feet, one story, brick.

Mills Starting Up.

*Massachusetts, Fitchburg. The Sun Mill Mfg. Co. has started operations in its new mill, which is equipped for manufacturing cotton cordage, wick and twine.

Fires.

Massachusetts, Rutland. Moulton Bros.' woolen mill at North Rutland has been destroyed by fire. The loss is placed be about $15,000, with no insurance. The mill was equipped with two sets of cards.

New Jersey, Paterson. The Peerless Plush Company's mill has been destroyed by fire. The loss is placed at $150,000, covered by insurance.

Pennsylvania, Philadelphia. The building occupied by James E. Mitchell & Co., has been burned and stock of woolen and cotton yarns in building damaged, the loss reaching about $125,000. About $50,000 damage was done to Wm. D'Olier & Co.'s stock, and $25,000 to Buckingham, Paulson & Co. The losses are covered by insurance.

Failures and Suspensions.

Pennsylvania, Philadelphia. The Quaker City Dye Works Company, 116 Oxford street, has made an assignment to Peter O'Neill, for the benefit of the creditors. The company was capitalized at $400,000, H. B. Latta, secretary. An official statement of the company's affairs has not yet been prepared.

Pennsylvania, Philadelphia. A fire in the Armure Tapestry Mill at Fairhill and Somerset Sts., caused considerable damage, largely by water. Covered by insurance.

Facts and Gossip.

Among recent dividends declared July 1st by some South Carolina mills are the following: Pelzer Mfg. Co., 4 per cent. on $100,000; Mills Mfg. Co., 3 per cent. on $380,000; Piedmont Mfg. Co., 5 per cent. on $800,000; Easley Cotton Mill, 3 per cent. on $250,000; Victor Mfg. Co., 4 per cent. on $350,000; Reedy River Mfg. Co., 3 per cent. on $120,000; American Spinning Co., 4 per cent. on $350,000; F. W. Poe Mfg. Co., 4 per cent. on $500,000.

*Alabama, Girard. The stockholders of the Girard Cotton Mills have increased capital stock from $37,500 to $70,000, to pay for improvements which have previously been reported would be made.

Arkansas, Little Rock. The Little Rock Board of Trade, Geo. R. Brown secretary, is interested in securing the establishment of a cotton mill here for manufacturing brown goods, but as yet have made no definite movement. They are endeavoring to raise capital stock of $100,000 for the purpose, and will take the matter up each year until the project is secured.

Arkansas, Malvern. The citizens of this place have accepted a proposition recently made, whereby the Centre Point Woolen Mills, at Centre Point, Ark., will be removed here at an early date. The plant manufactures jeans, flannels, kerseys, blankets and yarns, operating one set cards and 12 looms.

California, St. Marysville. It is reported that at a special meeting held recently by the stockholders and directors of the Marysville Woolen Mills, that the plant was leased to Henry Malloch, who has been managing the mill since Mr. Carter severed his connection with the plant.

Connecticut, Johnsonville. The Emery E. Johnson Twine Mills at this place will be incorporated.

Georgia, Americus. It is reported that a New York company has made offers to erect a $90,000 knitting mill if sufficient local encouragement is extended to the enterprise. A site and exemption from taxation for a long period has been offered by the city.

Georgia, Atlanta. The indefatigable Louis B. Magid has turned up at this place, this time with a project for silk culture in Georgia, and announces that he intends to make his home at Tallulah Falls, and devote his energies to arousing interest in the silk worm.

Georgia, Griffin. J. J. Mangham has been elected president of the Spalding Cotton Mills, succeeding W. J. Kincaid, who retires. J. W. Mangham is now treasurer of the plant and Douglas Boyd vice-president.

*Georgia, Harmony Grove. Last instalment of additional stock to the Harmony Grove Cotton Mills have been called to complete the large additions to the mill.

*Illinois, Kewanee. A committee has been appointed to solicit subscriptions toward the new glove and mitten factory projected at this place. Adam Menche, Edward A. Whitney and C. F. Sullivan are intereetsd.

Indiana, Madison. The Council is considering a proposition made by Hon. Louis Schneck of Seymour and C. A. Street of Chicago, who are negotiating with Mr. Ross of the Ross Textile Mfg. Co., for the purchase of machinery in his woolen mill. The proposition is that they will take the building and operate same on present site, if granted $25,000 and ten years' free water.

Kentucky, Hopkinsville. O. G. Hille is interested in a project on foot for erecting a hosiery mill at this place.

Massachusetts, Attleboro. Charles F. Orr, now located at Mansfield, is contemplating removing his plant as soon as power plant of new building is completed.

Massachusetts, Franklin. It is reported that the Franklin Knitting & Yarn Mfg. Co.'s mill is to be transferred to Jacob Geb, an overseer for the American Woolen Co., who will have an associate interested with him, in manufacturing yarn.

Massachusetts, Lowell. The weaving, carding and spinning departments of the Merrimack Mills are running overtime. Four sets of small cards are to be taken out, making it a 16-set plant instead of 20.

Massachusetts, Millbury. The Kotedsilk Underwear Co. contemplates changing their method of manufacturing, to making a union suit composed of cotton and wool, the goods now made not finding a ready market.

Massachusetts, Milford. Machinery at the former Magid-Hope plant is being sold off and some of it removed. The Guering Spinning Co. of Woonsocket has purchased some of the carding and spinning machinery.

Massachusetts, Pittsfield. Wm. H. Hall, who for several years past has been associated with W. E. Tillotson, has sold out his interest in that firm to the latter.

Massachusetts, Pittsfield. The lower Pomeroy Mill has been purchased by Arthur Merritt, the dyestuff dealer of New York and Boston. The Helliwell Company, which has a long lease of the plant, will continue operating the same, as the property was bought for investment. It is reported that negotiations are under way with Theo. L. Pomeroy, owner of the upper mill, which has been on the market for some time, for purchase or lease of that plant.

*Massachusetts, Taunton. It is reported that the Cohannet Mills, Nos. 1 and 2, of the New England Cotton Yarn Co., will start operations.

Massachusetts, Waltham. The Waltham Bleachery & Dye Company will operate the plant but four days a week during remainder of the summer.

Michigan, Hastings. It is reported that the Hastings Wool Boot Co. contemplates building a large addition to their mill.

*Mississippi, Macon. J. P. Stovall, T. J. Wilkins and J. W. Cunningham of the Merchants' & Farmers' Bank, are interested in project under way for organizing a company to establish a cotton mill.

Missouri, Alton. The Board of Trade is reported in correspondence with Charles Groat Co. of Greenwich, N. Y., in reference to the establishment of their plant at this place.

New Hampshire, Manchester. There are various rumors concerning the disposition of the Olzendam plant, one of which being that a new company is to be formed, to which the property will be sold. Nothing definite has yet been given out.

New Jersey, Paterson. The Totowa Silk Company will be known as Corbett, Reinhardt & Co. after August 1st. The plant has formerly been controlled by Messrs. Hoeninghaus and Curtiss, but the death of Mr. Curtiss has made changes necessary. The concern will be a partnership and not a stock company.

New York, Amsterdam. Messrs. Hull and Smith retire from the firm operating the Royal Knitting Mills. Mr. Loevenheim has purchased an interest and also Carl Zeyst. They will organize a new company, probably the Sovereign Knitting Co., reported incorporated. They expect to start up the plant the 1st of August.

New York, Amsterdam. The West Shore Knitting Mills have been removed from this place.

New York, Cohoes. The water will be drawn out of the canals Aug. 9th, and will be turned on again Aug. 16th.

New York, Crownpoint. The Union Towel Manufacturing Company has been incorporated with a capital stock of $25,000, by J. D. Bly, F. H. De Wolf of this place and J. C. Harrington of Schuylerville. Some time ago Mr. Harrington was trying to interest capitalists in the project of establishing such a plant in Glen Falls.

New York, East Salem. Messrs. Greenwood & Clarke, who have been operating the Eagleville Woolen Mills for the past year, have given up busines and returned to Maine. C. P. Hatch, owner of the property, will operate.

New York, Elmira. The John N. Stearns Company, operating mills at this place, Williamsport, Penn., and Petersburg, Va., has been incorporated with a capital stock of $1,500,000.

*New York, Gouverneur. It is reported that operations will start soon on buildings for the new lace project for which $75,000 has been raised by the people of the town.

*New York, St. Johnsville. The Royal Mills of this place and the Gem Knitting Mill of Herkimer have been consolidated under the name of the Royal Gem Mills Co., previously reported to operate the plant of the Gem Knitting Mills, with Mr. Reaney of St. Johnsville as manager. The capacity of the St. Johnsville Mill is to be increased, although not much machinery will be put in, the largest being made at Herkimer.

*New York, Wellsville. We have been advised that the project of establishing a lace mill at this place seems to be at a standstill, as the required capital is not yet obtainable. M. D. Haskins, W. L. Ward and J. B. Jones are interested.

North Carolina, Burlington. A site has been purchased near this place by J. Q. Gant & Sons, who contemplate building a cotton mill.

*North Carolina, Fayetteville. The bondholders of the Fayetteville Cotton Mill have purchased the plant, recently resold by order of the court, for $12,000.

*North Carolina, Graham. The Oberon Mill Company, previously reported incorporated with a capital stock of $200,000, will do no work this year. J. V. Pomeroy of the Voorhees Mfg. Co. is interested in the company.

North Carolina, Lincolnton. It is reported that Mauney Bros., who recently purchased the Delima Cotton Mills from J. L. Kestler & Co., will soon have the plant in operation.

North Carolina, Tryon. A. D. Beatson is interested in forming a company to erect a $50,000 knitting mill at this place. A building 100 by 40 feet is proposed for manufacturing women's cotton underwear.

North Carolina, Winston-Salem. The Shamrock Knitting Mills, J. W. Kanes, proprietor, now operate 150 machines.

*Ohio, Cleveland. Chas. F. Sterling will represent the National Woolen Co., at 170 Summer Street, Boston, Mass. The Philadelphia office of the company will be located at 34 North Front Street.

*Oklahoma Territory, Oklahoma City. Dr. John Threadgill and Clarence Bennett are reported as interested in establishing a twine mill here, and arrangements are being made for removing the one at Independence, Kan., to this place.

Oklahoma, Oklahoma City. It is reported that local and foreign capitalists are preparing to erect a plant here for manufacturing twine, and that stock is being subscribed for the purpose.

Ontario, Alberta, Edmonton. A woolen mill is under construction at this place for W. J. Webster.

Pennsylvania, Doylestown. William Averyard and J. S. Utley, operating the worsted mill at this place, have dissolved partnership by mutual consent. The business will be continued by J. S. Utley.

Pennsylvania, Harrisburg. George C. Steinhauer, representative for a large New York concern, has been looking for a site upon which to erect a knitting mill and has secured an option on property here. The Committee on Manufactures has the matter under consideration.

Pennsylvania, Kingston. S. R. Antrim of Philadelphia is interested in establishing a silk mill and has been at this place investigating suitable localities.

Pennsylvania, Muncy. J. R. Rankin is interested in establishing a silk mill at this place.

Pennsylvania, Philadelphia. Shelmire & Brownhill's knitting mill, 2120 East Dakota street, is now operated by Brownhill & Kramer, Mr. J. W. Shelmire having withdrawn from the firm and George Kramer securing interests.

PERSONAL RECORD.

Cotton.

James H. Albertson, who for many years has been assistant superintendent of the Owaneco Silk Mill No. 2, Norwich, Conn., is now superintendent of the mill.

J. F. Boatreer has resigned as overseer of carding with the Opelika Cotton Mills, Opelika, Ala., to take a similar position with the Central Mills, Sylacauga, Ala.

E. B. Brown, formerly with the Elizabeth City Cotton Mills, Elizabeth City, N. C., has accepted a position as overseer of carding for the Cherokee Falls Mfg. Co., Blacksburg, S. C.

William H. Butler, overseer of the designing department of the Manchester Mills since 1898, has been appointed to succeed George A. Clark, as superintendent. Mr. Clark will give up active business life. Mr. Butler is also connected with Minot, Hooper & Co., selling agents, of New York.

William Buzzell of Methuen has engaged as designer with the Acushnet Mills, New Bedford, Mass.

John C. Brooks, of Paterson, N. J., has accepted a position as designer of jacquard weaving at the Arrowanna Mills, Middletown, Conn.

Frank J. Baker, spinner, late of Winder, Ga., is now with Brower & Love, proprietors of the Indiana Warp Mills, Indianapolis, Ind.

J. A. Carroll, who recently resigned as president of the Limestone Cotton Mills, has been succeeded by A. N. Wood.

Arthur Caswell has accepted a position with the Corr Manufacturing Co., Taunton, Mass., as overseer of weaving.

R. F. Coble, overseer of weaving in Mills No. 4 and 5 of the Odell Mills, has accepted a position with the Kesler Mfg. Co., Salisbury, as superintendent.

James E. Coburn has been appointed superintendent of the Cooleemee Cotton Mills, Cooleemee, N. C. Mr. Coburn retires from the superintendency of the Hickman Mills at Graniteville, S. C. E. W. Thomas, present general superintendent of the Cooleemee Mills, will assume, in addition to his foremr duties, the duties of J. H. Webb, retiring secretary-treasurer.

E. L. Cridge, Passaic, N. J., has recently accepted the position of master mechanic with the Proximity Mfg. Co., Greensboro, N. C.

Samuel Fish is overseer of weaving with the Appleton Co., Lowell, Mass.

N. W. Greenhill has accepted a position as superintendent of the Commonwealth Cotton Mfg. Co.s Mills, Durham, N. C. He was formerly with the Pearl Mills.

Frank Hammond, who for the past three years has been overseer of the weavers in No. 1, 2 and 4 mills of the Pepperell Mfg. Co., Biddeford, Me., has sent in his resignation. Mr. Hammond's reason for giving his notice was that the work is too much for him. His work is arduous, and as he is getting well along in years, he feels that he needs a rest.

John Holt, overseer of carding for the Wamsutta Mills, New Bedford, Mass., severed his connection with that corporation recently. In September he will become superintendent of a mill in Norwich, Conn.

J. B. Hawkins, superintendent of the Victor Cotton Mills, Charlotte, N. C., has resigned, and taken a position as boss weaver in the Loray Mills, Gastonia, N. C.

C. F. James has been appointed superintendent of the Tavona Cotton Mills, Yorkville, S. C., succeeding G. R. Spencer, resigned.

J. W. Johnson has resigned his position in the dyeing department of the Eagle & Phenix Mills, Columbus, Ga.

Edward Kilburn of New Bedford, Mass., general superintendent of construct on for the New England Cotton Yarn Company, has resigned.

M. R. Leaume is overseer of carding for the Uncasville Mfg. Co., Uncasville, Conn.

W. H. Lynch has been appointed superintendent of the Orangeburg Mfg. Co., Orangeburg, S. C. He succeeds T. J. McNeely.

M. A. Leavitt has resigned as agent of the Griswoldville Mfg. Co., Griswoldville, Mass., which position he accepted in 1899, and will assume charge of a large grist and saw mill at Kennebunk, Me., which he recently bought. Mr. Leavitt has been in the cotton industry for the last 30 years. For many years he was overseer in the No. 2 Lyman Mill.

E. H. Lovelace, late of Newbury and Selma, is now overseer of weaving, slashing, cloth room and twister room at the Thomaston Cotton Mills, Thomaston, Ga.

J. W. Meares has resigned his position as superintendent of the Monroe Cotton Mills, Monroe, Ga., to accept a similar position with the Pepperton Mills, Jackson, Ga.

J. A. McMillan, secondhand in the weave room of the Olympia Cotton Mills, Columbia, S. C., has resigned to become overseer of weaving in the Canton, Ga., Cotton Mills.

George L. Manning of Westfield has been engaged as general manager and superintendent of the new thread mills to be started soon by the J. L. & T. D. Peck Mfg. Co., Pittsfield, Mass. The work of

remodeling one of the largest buildings at the Peck lower factories has been started, and is under the supervision of Mr. Manning, wh owill look after the erection of the new main structure to be used for spinning and spooling the product and the installing of all the special machinery. Mr. Manning started the Warren Thread Works in Westfield about 20 years ago and has since had the management of the plant and the sale of the goods.

J. J. Mangham has been elected president of the Spalding Cotton Mills, Griffin, Ga., succeeding W. J. Kincaid, who retires. J. W. Mangham is now treasurer of the plant and Douglas Boyd is vice-president.

Joseph Mayo, overseer of weaving in the Boott Cotton Mills, Lowell, Mass., has resigned, and is now employed in Waltham, Mass., in a similar capacity.

W. B. Meacham has been elected secretary and terasurer of the Fort Mill Mfg. Co., Fort Mill, S. C., to succeed J. M. Spratt, resigned.

Thomas Morais, formerly with the Grant Mills, is now overseer of ring spinning for the Laurel Lake Mills, Fall River.

Edward O'Hearn has resigned his position as overseer of weaving for the Shove Mill, Fall River, Mass. He is succeeded by William Kershaw.

J. E. Pressley, overseer of carding for the Gibson Mfg. Co., Concord, N. C., has resigned.

A. J. Rose has taken a position with the Cabarrus Cotton Mill, Charlotte, N. C., as overseer of carding.

G. R. Spencer has resigned as superintendent of the Tavona Cotton Mills, Yorkville, S. C. He has accepted the superintendency of the Edgefield Mfg. Co., Edgefield, S. C.

John F. Scott of Philadelphia, formerly instructor of carding and spinning in the Philadelphia Textile School, and more recently employed as superintendent of knitting mills in New York and the New England States, has been engaged as agent of the Gibson Mfg. Co., Concord, N. C.

J. M. Short, formerly of Morganton, is now night superintendent with the Indain Creek Manufacturing Co., Lincolnton, N. C.

M. R. Vick has resigned his position of superintendent of the Meridian Cotton Mills, Meridian, Miss.

J. M. Ward, overseer of carding at the Union Cotton Mills, Union, S. C., has been appointed assistant superintendent of the mills.

Richard Ward has succeeded Edwin Barlow, resigned, as overseer of mule spinning for the Boston Manufacturing Co., Waltham, Mass. Mr. Barlow has accepted a similar position in Helena, Ark.

A. L. Ware has severed his connection wit hthe Lowe and Eastern Mfg. Companies, Huntsville, Ala., and returned to Worcester, Mass. The mills have been placed under the management of Tracey W. Pratt, president of the West Huntsville Cotton Mill.

Frank G. Waters, superintendent, has been succeeded at the mill of A. B. Burleson & Co., Jewett City, Conn., by N. Babcock.

James Wright has accepted a position as overseer in the spinning department of the Lorraine Mills, Pawtucket, R. I. He was formerly at the Ann & Hope Mills of the Lonsdale Company.

Woolen.

George Atchison, who is now overseer of weaving at the American Felt Co., Glenville, Conn., has been overseer of weaving of the Capital City Woolen Mills, Des Moines, Ia.; Columbiaville (Mich.) Woolen Mill; Stroudsburg Woolen Mills, Stroudsburg, Pa.

Thomas E. Ainley has accepted the position of overseer of carding in both mills operated by the Canada Woolen Mills Co., Carleton Place, Ontario.

William H. Bagley has resigned as superintendent of the Midlesex Co., Lowell, Mass. Mr. Bagley has been 18 years in the employ of the Middlesex Co., nine years as overseer and the remainder as superintendent.

Mr. Bothwell has succeeded Thomas E. Ainley as overseer of carding for William Thoburn, Almonte, Ont.

E. W. Burne has accepted the position of boss finisher at the American Mills, Rockville, Conn.

Thomas J. Boodel of Blackstone is the new overseer of the American Woolen Company, Franklin, Mass.

C. H. Cook, formerly of Madison, Me., has accepted the position of overseer of finishing for the Aldrich Mfg. Co., Charlton City, Mass.

E. S. Creamer, designer for the Coronet Worsted Mills, Mapleville, R. I., has resigned.

John Collier, boss weaver at the Success Worsted Co., North Chelmsford, Mass., has severed his connection with that company.

John Eastwood, finisher at the mill of F. S. Mackenzie, Woodstock, Vt., has resigned and accepted a similar position at the Burlington Mills, Winooski, Vt.

M. P. Fallon, North Adams, Mass., has been engaged as boss finisher for the Elmville Woolen Co., Danielson, Conn.

George Feidler of Rockville, Conn., has accepted a position as designer with the Coronet Worsted Co., Oakland, R. I.

John Fisher, formrely with the Haile & Frost Mfg. Co., Hinsdale, N. H., is now with the Merchants' Woolen Co., East Dedham, Mass., filling the position of overseer of spinning and succeeding J. A. Naylor.

James Jurett is the new overseer of spinning at the Hartford Carpet Corporation, Thompsonville, Conn. He was formerly overseer of spinning at the American Felt Co., Glenville, Conn.

C. H. Klebart is now boss dresser for the Sayles & Jenks Mfg. Co., Warren, Mass. He was formerly with Beebe, Webber & Co., Holyoke, Mass.

John Lockett has accepted the position of overseer of weaving department of the Dawson Mfg. Co., Holden, Mass.

Lees Mollison has resigned his position as boss finisher for the Warren Woolen Co., Stafford Springs, Conn.

Fred W. Nash, formerly of the Bridgeton (N. J.) Woolen Co., is now overseer of dyeing at the American Felt Co., Glenville, Conn.

D. J. Norton has resigned as overseer of carding and spinning at the Wilton (Me.) Woolen Mills to accept a poistion as boss carder in the Forest Mills Co., Bridgton, Me.

J. C. Ryan is now overseer of carding for the Mayo Woolen Company, Millbury, Mass. He was formerly employed in No. Vassalboro and Dexter, Me.

H. M. Schofield has accepted the position of designer for the American Mills, Rockville, Conn. He was formerly connected with the Lowell Textile School, Lowell, Mass.

George Stevenson, formerly boss finisher at the Fulton Worsted Mills, Fulton, N. Y., is now finisher at the Coronet Worsted Co.'s mill at Mapleville, R. I.

William Smith has severed his connection with H. Waterbury Sons & Co., Orisakny, N. Y., and gone to Trenton, N. Y.

E. H. Witt, formerly overseer of spinnin gat Springfield, Mass., is now overseer of spinning at the Hartford Carpet Corporation, Thompsonville, Conn.

Charles H. Wilbur has been engaged as master mechanic of G. H. Gilbert's No. 4 mill, Gilbertville, Mass.

George Way, late with the Crown Woolen Mills of Marcellus, N. Y., is now overseer of weaving for the Humphrey Mfg. Co., Moncton, N. B.

Gardiner M. Youngman is superintendent and Clair S. Taylor geenral manager of the new Taylor Mfg. Co. of Hope Valley, R. I., which recently leased the mill formerly known as the Hope Valley Wooler Co. Messrs. Youngman and Taylor, together with the latter's fatner, compose the company.

Knit.

C. O. Bean, who has been with the Glendora Knitting Co., New Haven, Conn., is now with the Wayne Knitting Mills, Fort Wayne, Ind.

C. Crabtree of Raleigh, N. C., who for ten years has been overseer of spinning at the Raleigh Hosiery Co., has resigned that position to become superintendent of the new yarn mill at Durham, N. C.

Howard Dudley, Providence, R. I., and late of Napa, Cal., has engaged as overseer of dyeing with the Mankato Mills Co., Mankato, Minn.

George Feherer is overseer of finishing with the Glastonbury Knitting Company, Addison, Conn.

George Harris has left Ipswich, Mass., to assume his duties as superintendent of the Ipswich Mills at South Boston, Mass.

Edward L. Humphrey has severed his connection with the Royal Knitting Mills, St. Johnsville, N. Y.

J. S. Kennelly has resigned as secondhand of knitting at the Health Underwear Co., Poquonock, Conn.

Edward C. Kennedy has engaged temporarily with the Birmingham Hosiery Mills, Birmingham, Ala.

John E. Outtrim, who has been connected with the works of the Glastonbury, Conn., Knitting Co. for 21 years, and for a number of years foreman of the finishing department, has resigned. The officers and employees of the mills presented him with a gold watch and chain.

Joseph Reaney of St. Johnsville will have the management of the plant formerly operated by the Gem Knitting Mill at Herkimer, N. Y., purchased by the Royal Gem Knitting Mills Co., recently organized at Portland, Me. He will also have the management of the plant at St. Johnsville, and will continue to resid eat St. Johnsville.

John W. Richardson, for several years conecetd with the Raleigh Cotton Mills, Raleigh, N. C., has resigned, to accept a position with the Weldon Cotton Manufacturing Co. at Weldon, N. C.

J. F Scott is superintendent of the American Hosiery Co., New Britain, Conn.

A. Smith, formerly at the Aken Knitting Co.'s mill, Philmont, N. Y., is now overseer of knitting at the Bristol Mfg. Co., Plainville, Conn.

M. Trimble formerly overseer of knitting at the Hoosick Falls (N. Y.) Hosiery Company, is now overseer of knitting at the Paugasset Mills, Derby, Conn.

Joseph Whittaker of Pittston, has been secured by the Hazleton Knitting Mill Co., Hazleton, Pa., to manage its plant. Mr. Whittaker succeeds H. G. Gabell, who recently resigned.

Deaths.

John O. Blood, prominently identified with the business interests of Amsterdam, N. Y., died last month, at the age of 71 years. He was a director of the Amsterdam City National Bank, member of the Board of Trade, president of the Blood Knitting Co., a director of the Pioneer Broom Co., and a director of banks in Kansas and Illinois.

C. P. Emery, superintendent of the J. M. Odell Mfg. Co., Bynum, N. C., died quite suddenly at his home July 5th. His death came as a shock to his many friends.

William Greenough, of the firm of Patterson & Greenough, and president of the Waetrloo (N. Y.) Woolen Mills, died at Lake Placid, N. Y., on the 8th of July. He leaves five children.

Frederick A. Haserick, the founder of

and senior partner in the firm of Stoddard, Haserick, Richards & Co., Boston, died recently in Dresden, Germany. Mr. Haserick was born in Altenburg, Germany, in 1828. Of late years he had not atken an active part in business affairs, the management of the house being carried on by his son, A. A. Haserick. He had lived abroad since 1894, with occasional visits to this country. A widow, two daughters and three sons survive him. Of the sons, A. A. Haserick is the head of the Boston office, one is serving in the British army and the third is in the Broadford office of the firm.

Charles D. McDuffie, for 22 years agent of the Manchester Mills Corporation of Manchester, N. H., and during this time one of the most prominent figures in manufacturing circles in New England, died at the Sacred Heart Hospital early last month. The deceased was a native of Rochester, N. H., where he was born March 4, 1829. At the age of 20 he went to Lowell and entered a cotton mill. In 1852 he went to the Pacific coast, returning the following year and went to work in a mill at Salem, Mass. His progress was such that he was made an overseer in the Naumkeag Cotton Mills, and in 1868 he accepted the superintendency of the mills at Taunton, Mass. He was there until 1875, when he was tendered the agency of the Everett Mills, Lawrence, Mass., remaining in this position until Oct. 1, 1880, when he accepted the agency of the Manchester Corporation. During his residence in Manchester, Mr. McDuffie became actively identified with the business and social life of th ecity. In a quiet way, he was identified with many charaties. A wife and two sons survive him, Frederick C., treasurer of the York Manufacturing Company of York, Me., and of the Everett Mills of Lawrence, and Charles Harry of Manchester, a graduate of Harvard, and at present learning manufacturing in Manchester.

William Clark, the head of the Clark Thread Company, Newark, N. J., died July 7th on his yacht, Cherokee, off Portland, England. The deceased was born in Paisley, Scotland, in 1841. He came to this country in 1864 with his brother George, and in a small way began the manufacture of cotton thread in a little building on the banks of the Passaic River, in Newark. From that beginning, there grew the great works, having a branch in Paisley, Scotland, and covering with immense buildings many acres in Newark. In 1873 George Clark died, and William cantinued the management of the American business, being treasurer of the company. He abandoned active work five years ago because of failing health. He was at the head of the Clark-Coates Thread Company consolidation, which was formed several years ago.

Ammon Platt, of A. Platt & Son, manufacturers of woolen yarns, at Manayunk, Penn., died July 19th. Mr. Platt was one of the founders of the Keystone Mutual Insurance Company and a director of the Manayunk National Bank and Bangor Slate Company. He is survived by a son and married daughter. Deceased was 68 years old.

Leroy P. Smith, aged 50, for 34 years connected with the Sulloway Mills, Franklin, N. H., has deceased. He was recently made assistant superintendent of the mills.

Facts and Gossip.

Pennsylvania, Philadelphia. The woolen yarn plant of M. Lafferty, Coral and Taylor Sts., has been leased by J. Spencer Turner Co. of New York.

Pennsylvania, Philadelphia. The Hyndman & Moore Company has made an assignment for the benefit of creditors to Edmund R. Watson. The company's assets are estimated at $110,283.62. The liabilities are estimated at $21,434.19, for work, rent and merchandise, and a claim by James Pollock for $48,200 on notes. The company claims to have a set-off of $35,008.22, as against Mr. Pollock's claim.

Pennsylvania, St. Marys. E. J. McLaughlin is interested in the hosiery business and may start some such plant.

Pennsylvania, Waynesboro. J. H. Wolfe, formerly of the Pennsylvania Silk Co.'s mill, Fleetwood, which was sold to the York Silk Mfg. Co., is interested in locating a silk mill at this place. He asks town for site only, for building which he will erect and equip for the purpose. The Board of Trade will consider the project.

Pennsylvania, Wingohocking. The mills operated by the Garseds have been incorporated under New Jersey laws as Wingohocking Cotton Mills. Capital, $500,000.

Rhode Island, Central Falls. The Farwell Mills, at this place and at Middleboro, will in future be operated by the Farwell Worsted Mills, a new corporation. Capital stock, $450,000. This is simply an incorporation of the business hitherto conducted by the same parties. The Central Falls Mills, which have been running two shifts of help, have recently gone back to the old schedule.

Textile Patents.

(Continued from page 245)

Process of Making Extract Dyes. 704,843. Roberto Lepetit and Ernesto Tagliani, Susa, Italy.

Shuttle-Binder for Looms. 703,498. Edward S. Stimpson, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass., a corporation of Maine.

Shaking Strap for Looms. 704,642. Oswald Hoffman, Neugersdorf, Germany.

Take-up for Loom. 704,314. Frederick C. Gerfin, Columbia, Pa., assignor of one-half to Ferdinand W. Kort, Columbia, Pa.

Thread-Partner for Looms. 704,715. Edward S. Stimpson, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a corporation of Maine.

Weft Replenishing Loom. 704,485. William E. Moore and Frank R. Clark, Augusta, Ga.

Woven Chenille. 704,083. Thomas F. Naylor and Arthur Naylor, Kidderminster, England.

Warp Stop Motion for Looms. 703,666. Henry A. Owen, Whitinsville, Mass.

Yarn Drying Apparatus. 705,158. George Stone, North Andover, Mass., assignor to M. T. Stevens and Sons, North Andover, Mass.

Yarn Coloring Apparatus. 705,334. Alfred Fornander, New York, N. Y., assignor to the Carpet Yarn Printing Company, a corporation of New York.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the compositionof yarns, analysis of fabrics, etc, we will charge the enquirer with the cost of the investigation.

Numbering Braided Banding.

Editor Textile World:

How is braided banding numbered, and how can one determine the number of any one piece of banding?

Braid (254).

Braided banding is made with sixteen strands. Single No. 10 cotton yarn is taken as a standard and the number of the banding changes with the change in the number of threads in each strand. Two strands of 20s cotton yarn may be used in place of each strand of 10s, but in both cases the number of the banding is the same.

The following table gives the numbers of the banding and the yarn used in each of the sixteen strands:

No. of Banding.	Each strand.
30	2/10s or 4/20s
48	3/10s or 6/20s
64	4/10s or 8/20s
80	5/10s or 10/20s
96	6/10s or 12/20s
112	7/10s or 14/20s
128	8/10s or 16/20s

Intermediate sizes are made by adding one thread of 20s; thus, No. 40 banding comes between No. 30 and No. 48, and is made with 5/20s in each of the sixteen strands of which the braid is composed.

Production and Waste in Combing Cotton.

Editor Textile World:

I notice in the July issue rules giving the best way for finding the production and waste in combing cotton. I have found the following to be a quick and accurate method:

We will assume the speed of the coiler calender rolls to be 90 revolutions per minute, their diameter 3 inches, and the sliver delivered at the front to weigh 50 grains per yard.

$90 \times 3 \times 3.1416 = 848{,}232$ inches of sliver delivered per minute, or 23,562 yards. As each yard weighs 50 grains, $50 \times 23{,}562 = 1178.1$ grains per minute, or $1178.1 \times 60 \times 10 = 706{,}860$ grains per 10-hour day. $706{,}860 \div 7000 = 100.98$ lbs. per day.

From the foregoing we deduce this formula: Speed of calender roll × diameter of calender roll × 3.1416 × weight of sliver in grains × minutes per day ÷ 36 × 7000 = pounds production per day.

Some allowance must be made for stopping, say from ten to twenty per cent., according to the length of staple and various conditions.

To find the percentage of waste, the machine should first be thoroughly cleaned out; weigh each can of sliver during the test, and at the end weigh the waste from the machine. We will suppose the sliver delivered to weigh 42 pounds; the waste 6¼ pounds. The sum of these two must represent the total amount of cotton entering the machine, or 48¼ pounds; and the per cent. of waste would be: $6.25 \div 48.25 = 12.95$ per cent.

BEN SHAW.

John Quincy Adams and the Metric System.

Editor Textile World:

I notice in the editorial columns of your June issue a statement that John Quincy Adams is on record against the adoption of the metric system. What is your authority for this statement?

Marin (253).

John Quincy Adams made a report on the metric system, which is acknowledged to be the most complete presentation of the subject that has ever been made. One of its greatest merits is its fairness, and the idea that he favored the introduction of the metric system into the United States has sometimes been obtained by reading extracts in which he gives that system due credit for its merits. His conclusions are summed up in the following extract from his report:

"The motives for entertaining the opinion, that any change in our system at the present time would be inexpedient, are four:

"First, That no change whatever of the system could be adopted, without losing the greatest of all the elements of uniformity, that referring to the persons using the same system. This uniformity we now possess, in common with the whole British nation, the nation with which, of all nations of the earth, we have the most of that intercourse which requires the constant use of weights and measures. No change is believed possible, other than that of the whole system, the benefit of which would compensate for the loss of this uniformity.

"Secondly, That the system, as it exists, has an uniformity of proportion very convenient and useful, which any alteration of it would disturb, and perhaps destroy;

the proportion between the avoirdupois and troy weights and that between the avoirdupois weight and the foot measure; one cubic foot containing of spring-water exactly one thousand ounces avoirdupois, and one pound avoirdupois consisting of exactly seven thousand grains troy.

"Thirdly, That the experience of France has proved, that binary, ternary, duodecimal and sexagesimal divisions, are as necessary to the practical use of weights and measures, as the decimal divisions are convenient for calculations resulting from them; and that no plan for introducing the latter can dispense with the continued use of the former.

"Fourthly, That the only material improvement, of which the present system is believed to be susceptible, would be the restoration of identity between weights and silver coins; a change, the advantages of which would be very great, but which could not be effected without a corresponding and almost total change in our coinage and moneys of account; a change the more exceptionable, as our monetary system is itself a new, and has hitherto been a successful institution."

Cotton Worsted.

Editor Textile World:

I enclose a sample of a cotton worsted. Please let me know what width to weave these goods; what kind of colors the cotton and worsted should be dyed with; where I can purchase the yarn; what the difference is between the French, Bradford and English systems of worsted spinning; what kind of yarn will be the best for me to use; what is the difference between the systems mentioned and the German system; what kind of soap should be used for finishing the goods and how strong; whether the pieces should be soured after scouring or not, and what changes in the size of the yarn should be made in order to make a light weight fabric the same as the enclosed heavy weight.

Omnibus (247).

We should say that a loom width of 63 to 65 inches would be about right for the sample sent us by our correspondent. This width would depend upon circumstances, such as the method of handling in the finishing room, twist in the filling, etc. The best results in making cotton worsteds are obtained by using an aniline black cotton. This, of course, costs more, but gives better satisfaction. A logwood black would be all right for the worsted.

Our correspondent will find a complete list of yarn manufacturers and dealers in the Textile World's Directory; from it he can select dealers who can supply both cotton and worsted yarns.

The Bradford and English systems of worsted spinning are one and the same. The inherent peculiarities of the French system are, however, that the sliver is drawn without twist, and the yarn is spun on a mule. Shorter stock can be used when spun with the French system, and the yarn is frizzier. Strictly speaking, there is no German system as distinguished from the French and Bradford. What is sometimes called the German system is the same as the French, except that German machinery is used.

Bradford spun yarn is what our correspondent needs for this cotton worsted. The soap to be used depends upon the amount of foreign matter, such as oil and dyestuff, in the goods, and a particular brand cannot be recommended in advance. No acid bath is needed after the goods are scoured, provided the color is right.

A light weight piece of goods can be made from the same size of yarn as this heavy weight is made from, the only change necessary will be to leave out the backing yarn. It might be found necessary to change the number of threads and picks in order to get the weight and handle desired. The best way would be for our correspondent to select a ligh weight sample that suits him and duplicate it.

Shoddy Goods.

Editor Textile World:

Please give me the address of several eastern manufacturers of all wool shoddy goods equal to the Dewsbury, Eng., shoddy goods for fastness of color, finish and handle.

Schneider (255).

The Dewsbury all wool shoddy cloths will average much better in finish and general appearance than similar goods of other countries. The art of converting shoddy into woven fabrics has reached its highest development in Dewsbury, England. The English goods have no superiority as regards color. In such goods the fastness of the color is of secondary importance, as even a poor color lasts longer than the cloth itself.

The excellence of English shoddy cloths is the result of long experience in this line of manufacture. The operatives have become highly skilled, and it is not unusual to find cases where three and even four generations have been employed continuously in the same department of the mill. The machinery has been perfected in England for handling low stock, and mills run on one grade of goods without change.

This limitation of a mill's production to one grade is well illustrated by the

refusal of a successful Dewsbury maker of casket cloths to accept an order for goods made with four picks less per inch than were in his regular fabric, although his mill was running slack at the time. He argued that the handling of goods differing as little as this one from his regular "make" would upset the ideas of his operatives, and result in a deterioration of the fabric for which he had acquired an enviable reputation.

The failure to make Dewsbury shoddy goods in this country has been due to the use of American methods where only Dewsbury methods will answer. A few concerns have proved exceptions to the rule and by starting with English methods and help have succeeded in producing a cloth, but little inferior to the Dewsbury fabric.

Speaking broadly, however, the English woolen manufacturer beats the world in "making a whistle out of a pig's tail." We refer Schneider to an article in this issue, New Fabrics from Yorkshire, by our English correspondent.

Twist Constants.

Editor Textile World:

Please state how to obtain and use twist constants for cotton spinning. I want a rule that I can give to my overseer, and by which he can determine what gear to use for any given number of turns of twist per inch, and what number of turns will result from the use of a given gear.

Frugal (259).

In another part of this issue will be found a clear explanation of how to obtain and use twist constants.

New Publications.

Foreign Trade Requirements; Lewis. Scribner & Co.; 532 pages; 125 East Twenty-third street, New York.

This book is filled with information calculated to help the merchant to introduce his goods into foreign markets. This volume states the conditions that are of a more or less stable character, and the publishers reserve for special reports the data regarding prices, discounts, competition, custom duties, names of dealers and other matters that are constantly changing.

The contents of the volume just issued are arranged as follows:—

Trade conditions of the world; Traveling salesmen; Agencies and advertising; Credit customs of the world; Commercial laws of the world; Trade-mark and patent laws of the world; Transportation facilities of the world; Encyclopedia of all principal commercial cities (giving location, population, industries, banks, etc.); Coins and currencies of the world; Postal regulations; Cable rates; and weights and measures of the world (with United States equivalents).

The section on trade conditions gives the outlook for the ensuing year. The chapter on traveling salesmen will be found of especial value.

It is a work that should be in the possession of every firm interested in selling goods outside the borders of the United States. It is issued annually with quarterly supplements. The contents are indexed so that quick reference can be made to any subject.

Cotton Combing Machines; by T. Thornley; D. VanNostrand Co., New York; illustrated. Price $3.00.

This is an important addition to the literature of cotton combing. It is by the author of Draw Frames and Fly-Frames, Cotton Spinning Calculations and Mule Spinning, works well known on both sides of the Atlantic. The greater part of the treatise on cotton combing is taken up with a consideration of the Heilmann machine, but there are chapters treating of the other types of combers that have been introducted in this country and continental Europe. The author has handled the subject in a thorough and practical way, and the work will prove of great value to both operative and manager by giving them the information about combing and combers between the two covers of one book.

Transactions of the New England Cotton Manufacturers' Association; No. 72.

This is the usual report of the annual meeting, the last one and the subject of this issue having been held in Boston, April 23d, of this year. The papers and discussion of them are printed in full.

The Textile Fibres of Commerce; by William I. Hannan; J. B. Lippincott Company, Philadelphia; 236 pages. Price $3.00.

The textile fibres, animal, vegetable and mineral, are arranged in this work alphabetically by their common names. The places of origin, properties and uses of each are given in concise language. Especial credit is due for the illustrations, which were with few exceptions made specially for this work, which is a valuable cyclopedia of textile fibres. Its wide scope does not permit us to give any abstract of the contents which cover all the textile fibres of commerce. Both the plan of the work and the manner in which the author has carried the plan out in this, the first edition, are excellent, and the book will prove valuable to all interested in textiles.

The Blue Book; Davison Publishing Co., 401 Broadway, New York; price, office edition, $3.00; traveler's edition, $2.50.

We have received the 1902 edition of this well known textile directory, which in addition to its usual features contains this year a map of Fall River, showing the location of all the cotton mills in that city. This directory includes the textile manufacturers both of the United States and Canada, together with a list of dealers in mill supplies, dye-stuffs, yarn, etc. It is most attractively gotten up and shows every evidence of careful compilation.

Silk, Its History, Culture and Manipulation; by Henri Silbermann; Gerhard Kuehtmann, Dresden; 2 vols.; 1031 pages; price $15.00.

This work is an exhaustive treatise upon the history, culture and manipulation of silk up to its conversion into yarn

ready for warping or weaving. The author was led to compile this work by reason of the absence of a complete treatise on silk in the German language, and, although not a German himself, he has exhibited in these two volumes all of the thoroughness and attention to details so characteristic of German writers on technical subjects. The author says that if the reader is tempted to think that some of the branches of the subject are treated at unnecessary length, he should recall the saying of Goethe: "Who brings much will bring something to many." The following abstract of the table of contents gives but a faint idea of the extent of the work: History of silk culture, trade, and weaving from the earliest times to the present; Natural history; Wild silk; Culture of raw silk and its preparation for use; Silk waste industry; Artificial silk; Physical and chemical structure; Chemical technology of silk; Custom tariff on silk, its history from ancient times to the present; Statistics of the world's silk manufactures and trade.

Textile Raw Materials and their Conversion into Yarns; by Julius Zipser; translated from the German by Charles Salter; 302 illustrations; D. Van Nostrand Co., New York; price $5.00.

This work was originally written to fill a need existing in German literature for a text-book dealing with textile raw materials and their conversion into yarns, and the English edition will, undoubtedly, be found of great value, as it treats of the raw materials and the various processes by which they are converted into yarns in a systematic manner. The reading matter is accompanied by many illustrations, which add much to the value of the work.

Part I treats of the mineral, vegetable and animal raw materials; Part II takes up the operations by which the materials are converted into yarn, including the preparatory carding and spinning processes, utilizing waste and finishing the yarn to secure special effects.

Synoptic Tables for the Examination and Analysis of Textile Fabrics; by Charles Magnet; J. B. Bailliere et fils, Paris; price $1.00.

These tables have been compiled to give the analyzer and examiner of cloth a means of quickly obtaining information bearing upon any particular fabric, and which, otherwise, can be secured only by laborious research among many different volumes. The following list of the tables will give the reader an idea of the ground covered; Apparatus required; Solutions; Preparation of fibres and cloth for examination; General characteristics of vegetable fibres; Hemp; Cotton; Jute; Linen; New Zealand flax; Ramie; Table-summarizing vegetable and animal fibres; General characteristics of animal fibres; Wool; Shoddy; Silk; Artificial silk; Reactions of natural and artificial silk; Conditioning; Weighting; Chemical dissolution of cloths; Analysis of cloth; Layout; Strength; Examining metallic cloths.

All of the above subjects are treated in tabular form, which adapts the book to the needs of busy and practical men. There are numerous illustrations of the different fibres as viewed under the microscope. The text is in French.

Power Required for Looms; by Oscar Mey; Gerhard Kuehtman, Dresden; price $2.25.

It is certain that much power could be saved that is now wasted, if users knew how much was consumed by individual machines. In most mills at the present time the economizing of power is restricted to the methods of power generation. The cost per horse power delivered by the engine may be low, but the cost of the same power per yard of cloth may be excessively high owing not only to wasteful methods of transmission, but to waste by the machine doing the work. The literature on this subject is, unfortunately, very limited and such works as the one mentioned above cannot fail to be of great value to manufacturers by leading them to study a much neglected branch of their business.

Following is an outline of the table of contents: I—Cotton; 146 tests on 27 styles of English and German looms. II.—Jute; 55 tests on 15 makes. III—Linen and sail cloth; 133 tests on 25 makes. IV.—Worsted; 17 tests on 4 styles. V.—Cassimeres and dress goods; 37 tests on 20 makes; Summary of Results; Power Consumed by Stopping, illustrated by numerous graphic charts; Classified Tables, showing the results obtained from all the tests.

The experiments were conducted in various German mills, and the author deserves much credit for the painstaking care with which the tests have evidently been made and their results compiled.

The text is in German.

Flax Spinning Mills; by Dr. D. Gilbert, Medical Inspector Belgian Department of Labor, Brussels.

In this work are presented the results of a detailed and careful investigation into the sanitary condition of the flax workers of Belgium. It begins with a general account of the linen industry in Belgium, which is illustrated with views of the machinery and employees at work. Then follows an explanation of why the investigation was made. It appears that the health of the linen workers became so bad as to attract the attention of the government, and as a result the hours of labor in this industry were reduced some years ago. This failed to improve the conditions and a thorough investigation was ordered, the results of which have just been published in this volume. A mass of statistics are given and illustrated with graphic charts and diagrams, treating the subject from all points of view. It is not possible to give here an adequate description of the report. An inspection is sufficient to prove the faithfulness with which Dr. Gilbert has done his work. A striking feature is the photographs of deformities and diseased parts of the body, caused by working in the linen mills. The work concludes with a section describing the various devises for bettering the sanitary condition of the processes.

One and Two Family Dwellings; by E. Grossman; Otto Maier, Ravensburg; Price $4.00.

A portfolio containing 80 sheets showing plans of German dwelling houses of moderate cost. In addition to the ground and elevation plans, half tone illustrations show the completed structure. As the captions which are in Ger-

man comprise the only reading matter, the work is suited for the use of English readers.

The Smoke Nuisance and Waste of Fuel; by Ernst Schmatolla; Jaenecke Brothers, Hannover; price $1.00.

This work begins with a description of combustion in general, including imperfect combustion and its prevention under steam boilers. Then follows a chapter on the various types of grate bars, fire boxes and gas burning. The last chapter is devoted to a description of the principal German and Austrian patents relating to smoke combustion. The work is in German and can be imported through this office.

Mechanics and Acoustics; by Rich. Herm. Blochmann; Strecker & Schroeder, Stutigart. Price $1.50.

This is the first volume of Strecker & Schroeder's series of popular hand books of natural science. The author presents the subject in a style suited for that numerous body of readers who are not versed in the higher branches of science, and in fact have no occasion for going deeply into the subject. The work is brought up to date so as to cover the great progress recently made in all branches of natural science. Physics will be covered by three volumes, the second treating of Light and Heat, and the third of Electricity. Astronomy is the subject of a fourth volume, already published. Other books of this series will follow until the whole extent of natural science has been covered. The text is in German.

Collection of Embroidery Patterns; by Sara Rasmussen; Andr. Fred. Host & Son, Kjobenhavn, Denmark; Price, $1.00.

A collection of designs for embroidery on woolen cloth, canvas and sail cloth. The designs are after the old style of northern Europe and have met with a large sale on the Continent.

Business Literature.

Brass & Copper; Merchant & Co., Philadelphia.

This is a catalogue and price list of the brass and copper goods found in the line of Merchant & Co., 517 Arch St., Philadelphia. This firm claims it is the most complete list of its kind ever published. An inspection of its contents reveals much to confirm this strong claim. Any outline of the contents that we might make here would fail to give any adequate idea of the character and extent of the list. In addition to articles of brass, bronze and copper, we find many other metals and compositions. We advise every manufacturer to secure a copy.

Green's Economizer; The Green Fuel Economizer Co, Matteawan, N. Y.

In this catalogue is found a plain statement of the advantages and method of installing and operating the Green economizer. It will well repay reading by every steam user. Especially convincing are the statements of tests of boilers made with and without the economizer. The results show a marked economy effected by the economizer, and which varies from 12.5 to 18.3 per cent. A long list of firms using this device shows how extensively it is used by large users of steam.

Lacing a Belt. I. B. Williams & Sons, Dover, N. H.

A leaflet containing much valuable information regarding the lacing and measuring of belts, selection of leather, lacing, etc.

Fire Hose, Boston Belting Co., Boston, Mass.

This folder calls attention to the very complete line of fire hose carried by the Boston Belting Co., along with rubber belting, packing and mechanical rubber goods of every description.

Superheat and Superheaters; The Cruse Controllable Superheater Co., Salford, Manchester, England.

This is a useful treatise on superheated steams and the methods for its production. There is a chapter on the properties of saturated steam, and tables relating to steam pressure, temperature, etc. The publishers are the builders of the Cruse superheater, which is in extensive use in England.

New Color Cards.

Benzo Fast Red G. L. Farbenfabriken of Elberfeld Co., 40 Stone street, New York.

This card contains two samples of piece goods dyed with Benzo Fast Red G. L., with which formulas and directions are given.

Sulphon Acid Blue G. Farbenfabriken of Elberfeld Co., 40 Stone street, New York.

This card contains a sample of worsted piece goods dyed blue with Sulphon Acid Blue G.

Sulphon Cyanine Black B and 2B. Farbenfabriken of Elberfeld Co., 40 Stone street, New York.

This card contains four samples of worsted piece goods dyed, showing shades of blue and black made with Sulphon Cyanine Black B and 2B.

Immedial Direct Blue B. Cassella Color Co., 182 Front St., N. Y.

Twelve samples of cotton, four of raw cotton and eight of piece goods, are here shown dyed with Immedial Direct Blue B. Full directions regarding handling, etc., are added.

Alizarine Blue J. R. Farbenfabriken of Elberfeld Co., 40 Stone St., New York.

On this sheet appear two samples of woolen cloth dyed with Alizarine Blue J. R. Full directions for handling are given.

Oxy-Diaminogene O. B. and Oxy-Diaminogene O. T. Cassella Color Co., 182 Front Street, New York.

This card shows eighteen samples of raw cotton, cotton yarn and cotton cloth dyed with the above colors. Full directions for handling are given.

Chrome Fast Red GR. and R. Berlin Analine Works, 72 Front Street, New York.

This card shows fifteen samples of red on yarn and slubbing. Full directions for dyeing are given.

Benzo Fast Blue R. Farbenfabriken of Elberfield Co., 40 Stone Street, New York.

This card shows four samples of cotton cloth dyed and printed with the above named color.

Acid Blacks Combined with Logwood. Farbenfrabriken of Elberfeld Co., 40 Stone Street, New York.

Six samples of woolen goods piece dyed with a combination of acid wool black and logwood chips.

Benzo Fast Red L. Farbenfabriken of Elberfeld Co., 40 Stone St., New York.

Six samples of plain and mercerized cotton yarns, loose cotton and half silk union cloth dyed with Benzo Fast Red L. Full directions for dyeing are given.

Houghton Thread Board and Guide.

L. T. Houghton, Worcester, Mass., has recently received orders to equip the following mills with his patent thread board and guide: Stafford Mills, Durfee Mills, and the Fall River Iron Works, all at Fall River. The three orders cover 125,000 spindles and were given after thorough tests of the board had been made. The Golden Belt Mfg. Co., Durham, N. C., and the Whitman Mills, New Bedford, Mass., have also sent in orders.

Mr. Houghton reports that several mills have sent him repeat orders for the second time and that some mills are replacing their wood boards with the Houghton steel board. He adds that in every instance where tests have been made a saving of 10 to 75 per cent. in broken ends has been found; this saving is accompanied by the superior cleanliness and greater durability of the board. He advises us that at the present time 250,000 spindles have been equipped with his device.

He has been obliged to increase his floor space and manufacturing facilities 50 per cent. to accommodate his business. Many mills are trying the guide, and if the past experience is repeated, these tests will result in large orders.

The School of Industrial Art.

The summer season at the Pennsylvania Museum and School of Industrial Art, Broad and Pine Sts., Philadelphia, presents the usual scene of activity common to this period of the year. With all the space the buildings contain, each school season shows a congested condition, because of the annual and progressive growth of the institution both in attendance and the resulting necessary equipment. The past season just closed, it was conceded by the industrial art world, was the most successful and satisfactory in the history of the school.

The unexampled activity of the last year has made it necessary for the school to again largely increase its facilities in all departments, and one of the most important works of the summer will be the construction of a roomy annex to the Fifteenth St. end of the school building.

This extension will be completed before the beginning of the new school term, September 29th, and will be used particularly for the department of chemistry and dyeing, and printing of textiles.

By this addition the department will secure much-needed room, and will permit the introduction of higher studies in fibre testing and microscopical work. It also permits of advanced facilities for higher technical analysis pertaining to the properties of soaps, oils, tannins, etc., that enter into textile manufacture.

By the concentration of this work in the new building other departments will acquire needed additional room that will be occupied by additional machinery equipment. This is specially true of the department of power weaving, several new looms being ready for installation, as well as winding and twisting machines; these will all be ready for the fall term.

The school has recently received its exhibit made at the Charleston Exhibition, and the institution has been warmly and repeatedly commended by many classes for the excellency of the display that exceeded any school exhibit of its kind.

215 Chestnut St.

Messrs. Sykes & Street announce the removal of their Philadelphia store and office to 215 Chesnut St. They have previously been located on North Water St.

Hosiery Boards.

The Wisconsin Mfg. Co. of Two Rivers, Wis., manufacturers of hosiery boards, press boards and dye boards, have greatly enlarged their facilities by an addition to their plant, and are now in fine shape to care for their increasing trade. They claim for their boards the best material obtainable, thoroughly seasoned and especially prepared for their use. Their advertisement can be found elsewhere in this issue.

Ohio Agent.

Cass Harkins of Columbus, Ohio, a well-known manufacturers' agent and consulting engineer, who has been in business in Columbus, Ohio, for a number of years, has been appointed sole agent for Central Ohio for the We-Fu-Go and Scaife Water Softening and Purifying Systems, manufactured by Wm. B. Scaife & Sons Co., of Pittsburg, Pa.

Humidifiers.

The American Moistening Co., Boston, Mass., report the following orders received for their system of air moistening: The Dana Warp Mills, Westbrook, Maine, repeat order; The Tingue Mfg. Co., Seymour, Conn., new order; The Spartan Mills, Spartansburg, S. C., repeat order; The D. E. Converse Company, Glendale, S. C., new order; The Social Mfg. Co., Woonsocket, R. I., repeat order; The S. N. & C. Russell Mfg. Co., Pittsfield, Mass., new order; The Pontoosuc Woolen Mfg. Co., Pittsfield, Mass., new order; The Dallas Mfg. Co., Huntsville, Ala., new order; The Ponemah Mills, Taftville, Conn., repeat order; The Astoria Silk Mills, Astoria, N. Y., new order; The Jamestown Worsted Mills, Jamestown, N. Y., new order.

Kitson Machine Co.

At the recent sale of the Atherton Machine Company's plant at Lowell,

Mass., the patterns and stock in process belonging to their cotton opener and lapper business, were purchased by the Kitson Machine Company of the same city, who have now fitted up a department and are prepared to supply repair parts for existing machines built by either Whitehead & Atherton or the Atherton Machine Company.

Quick Work.

The old boilers at the Castle Spinning Mills, Worcestershire, Eng., were recently replaced, and now English and Canadian journals are pluming themselves upon the short time in which the change was made.

Excluding two days lost by reason of the English bricklayers' union choosing that particular time to make an exhibition of their power by ordering a strike, the work was completed within ten days. During that time, three old boilers were removed, and two new boilers, said to be the largest in the Midlands, were installed, the mechanical stokers were replaced by new stokers, the economizers reconstructed, the steam and fire pumps replaced, and a new steam engine set up, all within ten days.

Now the British press is pointing to the job and asking if the Yankees, who claim to be bosses of creation in doing work, could do as well.

Dampeners.

The American Moistening Co., Boston, Mass., report that they have received an order from the Slater Woolen Company, Webster, Mass., for a 56-inch fabric dampener.

—The Bigelow Carpet Company, having used the Green Economizer with good results for some years at Lowell, have ordered another for their plant at Clinton, and one has been ordered by the Rock Mfg. Co., Rockville, Conn.

—The Dyer's Trade Journal has been consolidated with the Commercial Trade Review and now appears as the Commercial Trade Review and Dyer's Trade Journal, published by the Commercial Trade Review Co., Ltd., 311 1/2 Walnut St., Philadelphia.

—The Burt Mfg. Co. of Akron, Ohio, announce that they have just furnished two very large Cross oil filters to the U. S. Steel Corporation for their works at Youngstown, Ohio, making 108 of their lubricating oil filters now in use by this company.

America's Grand Spa and Famous Resort—Saratoga Springs.

Midsummer is at hand, and the vacation season at the many summer watering resorts is now at its height. Especially is this so of Saratoga, the grandest, the most refreshing and the greatest of all American Summer Haunts.

The cooling springs are gushing forth with their supply of healthful mineral water; the pleasant parks are bedecked with all their summer glory; the magnificent and palatial hotels are a scene of never-ending life and gayety, while from the large varandas and spacious halls float the pleasant strains of delightful music. And the nearby lake now presents an ideal picture, situated, as it is, in a valley with receding hills on both sides, a clear, blue sheet of water with a surafce dotted here and there with boats and yachts.

The famous race track is a scene of animation and enthusisam. Here are the millionaire followers of the race tracks, the pick of the country, the fastest of horses and always intense interest. Here one can view a typical American Race Track Scene, and the greatest sport in the country with a first-class patronage.

At this particular season of the year, Saratoga is alone; she distances all rivals and has enjoymen: galore.

Saratoga can be reached from Boston via the Boston & Maine Railroad, which runs through cars from Boston via the Fitchburg Division.

The Buffalo Forge Co.

Among the recent contracts awarded to the Buffalo Forge Co. of Buffalo, N. Y., is one of particular interest, that of the Continental Coal Co., of Glouster, Ohio. They have ordered three 250-inch fans installed in their mines for the purpose of ventilating and exhausting fumes, smoke and all dangerous gases constantly met with in coal mining. The fans are 250 inches, housing of the 3/4 type and of the special width of 72 inches. The sides are built of extra heavy steel plate and are thoroughly braced with angle irons of ample size effectually preventing all vibration.

The blast wheels of these fans are of the usual centrifugal type. The radial blades or vanes with backwardly curved tips are supported by two spiders of wrought iron tees springing from cast iron hubs and are further stiffened by the conical side plates. The fan shaft is supported independent of the housing by two standard Buffalo self-aligning, chain oiling outboard bearings mounted on masonry pedestals. This plant is similar in many respects to that of the Modoc Coal Mining Co., located at the same place and recently installed by this company.

—Work is being rapidly pushed forward on the new Davis Mills, Fall River. The mill is well located in the center of the fine goods mill district and will have a spur track into its yard from the N. Y., N. H., & H. R. R., which will give it an advantage over others on freights. Every appliance to insure economy and up-to-dateness is being adopted, among them the Green Economizer which has recently been ordered.

South Carolina, Greer Depot. F. J. Pelzer of Charleston, F. J. Inglesby and L. W. Parker of this place have incorporated the Apalache Cotton Mill.

Tennessee, McMinnville. The Tennessee Woolen Mills, which were greatly damaged by a flood and were reported to be sold, have been purchased by Sam G. Stratton for $5,000. A stock company is to be organized and the plant put in running order as soon as arrangements are perfected.

IN AND OUT OF THE MILL.

Opportunity.

BY THE LATE JOHN J. INGALLS.

Master of human destinies am I!
Fame, love and fortune on my footsteps wait.
Cities and fields I walk. I penetrate
Deserts and seas remote, and passing by
Hovel and mart and palace, soon or late
I knock unbidden once at every gate!
If sleeping, wake; if feasting rise before
I turn away. It is the hour of fate,
And they who follow me reach every state
Mortals desire, and conquer every foe
Save death, but those who doubt or hesitate
Condemned to failure, penury and woe.
Seek me in vain and uselessly implore
I answer not, and I return no more!

Tell the Policeman.

If you bear a load of trouble that you think may bend you double and the burden grows no lighter as you plod along the way,

If today is one of sorrow and no joy in sight tomorrow, if the sun of golden promise sends to you no cheery ray,

Do not cloak your face with sadness and in sort of semi-madness pour your story in the ears of friends you meet upon the street—

They have cares too great to mention that require their whole attention; go and sing your doleful song to the policeman on the beat.

Every man upon his shoulders bears some burdens big as boulders, and none of them cares to have you pile your own upon the load,

Doesn't care to hear you chewing at the rag in grum reviewing of the way you feel the prickings of misfortune's cruel goad.

Though he listens to your fretting he is earnestly regretting that he cannot bid you wander to the land of fiery heat—

Or, to more politely put it, he is wishing you would cut it, and would go and tell your troubles to the copper on the beat.

Bear the load 'neath which you labor; do not seek to have a neighbor go ahead and brush aside the thorns that in your path are thrown.

For, although he may not show it, may not care to let you know it, you can bet your frowning features he has troubles of his own.

If it gives you satisfaction thus to keep your jaw in action, seek a sympathetic hearer out upon the quiet street—

When you see a big star glisten there you'll find an ear to listen and your troubles you can tell to the policeman on the beat.

—Denver Post.

The Stumbling Point.

There once was a tradesman who started a shop
On a very elaborate scale;
On corners to talk of this man they would stop
And his rivals would gasp and turn pale.
The town was agog o'er the things he set out
In bargains, from wagons to hoods,
But through one little flaw his defeat came about,
He couldn't deliver the goods.

Not only in commerce you'll often behold
The man who with promises fine
Is winning the cheers of the crowd—which grows cold
When a candidate new gets in line.
He glitters awhile in a glorious style,
And then he must take to the woods.
There are few, 'mongst the many who promise and smile,
Who really deliver the goods.

—Washington Star.

His Nationality.

McJones (enters street-car. Car gives jolt, and McJones is hurled into the lap of an elderly female)—"Excuse me, please."

Lady (into whose lap he has squatted)—"Excuse you! What are you—a heathen?"

McJones (apologetically)—"No; I'm a laplander."

"I think, sir, I will succeed if you give me a job. I have plenty of the quality written on your office door—plenty of 'Push.'"

"You'd do better young man, if you had a little of the quality written on the opposite side of the door—'Pull.'"
—Chicago Tribune.

She Told Him.

"Can you tell me why it is," he growled as he began diving under the bed, "that my slippers always seem to get pushed clear over against the wall?"

"Yes, dear," she answered, pleasantly.

"You can?"

"Yes, dear."

"Then why is it?"

"Because you don't put them away in the slipper rack when you take them off, dear."—Minneapolis Tribune.

Not His Feet.

Patient—I think, doctor, that my insomnia is due to cold feet.

Physician—That's very easily remedied; bathe your feet in hot water before retiring.

Patient—O, the feet I'm speaking of belong to my wife.

Against the Rules.

Mr. Flatte—What did the landlord say when you told him we had a baby?

Mrs. Flatte—He grunted and said: "Well, don't let it happen again!"—New York Sun.

The Morning's Work All Done.

Mistress—Is that sewer gas I smell?

Bridget (lately arrived from Oshkosh)—No, ma'am. I've cleaned the rooms, made the beds and turned on the gas ready for the night.—The American Hebrew.

His Preference.

"Which side of your face would you rather have shown in the picture?" asked the photographer.

"The outside," answered the sitter, who had heard of the advancement made in x-ray photography.—Baltimore American.

Nothing Too Good.

Mose Johnson—Dat liniment you sold me did mah wife lots ob good.

Druggist—Why, that was horse liniment! You said you wanted it for a horse!

Mose Johnson—Ah did, suh; but dar ain't nuffin too good fo' mah old woman, needer—jess yo' understan'.—Puck.

Might Have Prevented It.

Little Walter was eating lunch when he gave his arm a sudden shove, and splash! down went his glass of milk.

"I knew you were going to spill that!" said mama angrily.

"Well, if you knew," queried Walter, "why didn't you tell me?"—Chicago Little Chronicle.

They Know Him Not.

The ancient cat sits on the fence
And sings of other days;
His thousand children roam the earth
And wend their devious ways.
His throat is sore, his voice is cracked,
And sad is his "meow;"—
Not one of all his prosp'rous sons
Will recognize him now.

Puck.

In a Nutshell.

"Of course," said the promoter of the get rich quick company, "we can only give the prospective earnings in round numbers."

"Ah, yes," replied the victim, "because they couldn't possibly be square."—Philadelphia Press.

Insult to Injury.

He (reproachfully)—Perhaps you forget what happened yesterday. I was cut by my dearest acquaintance, the one I love best in all the world; in fact—

She (coolly)—The idea! Do you really shave yourself?—Philadelphia Press.

It Wouldn't Out.

"Here, here," exclaimed the hotel porter to Uncle Reuben, who was pouring water on the electric light; "what are you doing?"

"Wall, I tried tew blow th' thing out," replied Uncle Reuben, abashed, "an' it wudn't blow, so I jest thort I'd drown it out, b'gosh!"—Columbus State Journal.

Kindergarten teacher—Now, children, I have an impression in my head. Can any of you tell me what an impression is?

Bright boy—Yes, ma'am. An impression is a dent in a soft spot!

Smith and His Money.

"I can't make out what Smith does with his money."

"No?"

"No, I can't. Yesterday he was short and he's short again today."

"Did he want to borrow from you?"

"No. I wanted to borrow from him."—Chicago Journal.

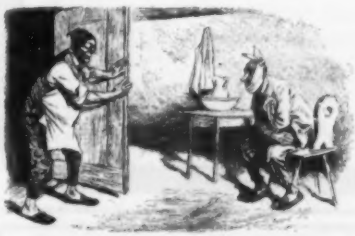
Experience the Only Teacher.

She—There's really no reason for married folks to quarrel.

He—No, except that they generally need a few quarrels to find that out.—Brooklyn Life.

Traveler—What's the weather going to be tomorrow, young man?

Youthful waiter—Very sorry, sir, but I haven't anything to do with that; you'll have to ask the head waiter—Fliegende Blaetter.



Patient (about to have his tooth pulled)—"What are you opening the door for?"

Dentist—"So we will have room enough."—Fliegende Blaetter.

The Hobo's Soliloquy.

Wot's de use o' wurkin' when
Wurkin' don't agree wid you?
Wot's de use o' doin' t'ings
Dat sumbuddy else ull do?

Life dat hain't got no wurk in
Is de life dat I likes best;
Kind o' wurk I'm lookin' fer
Is a day wid eight hours' rest.

Bobbie—You know them preserves out in th' pantry wot you told me not to eat?

Mother—Yes.

Bobbie—You know you said they'd make me sick if I et 'em, didn't you?

Mother—Yes.

Bobbie—Well they didn't.—Ohio State Journal.

"Say, Ma."

"Well."

"There are seven liars in our class at school."

"Oh, I wouldn't say that, dear. You might be mistaken."

"No, I ain't. Yesterday the teacher said that all of us that never told a lie should hold up our hands."

"And were there seven there who didn't hold up their hands?"

"No; there were seven that did."

Two Disappointed.

"Some one took my first ripe watermelon last night," said the colonel sternly. "Was it you?"

"No, sah," replied Rastus promptly, "I didn't expec' tuh take it til tunight, sah."—Ohio State Journal.

Another Fish Story.

First Mosquito—Did you get a bite?

Second Mosquito—Yes. I just landed a 200-pounder.—New York World.

Unqualified Approval.

The openwork stocking—
Ah, what could be neater?
'Tis especially admired
By the hungry moskeeter.
—Washington Star.

On the Sands.

She—Really, I don't feel like walking. My feet have bothered me a good deal lately.

He—You must be exceedingly nervous.

She—Nervous?

He—Yes; otherwise you wouldn't let such little things bother you.—Philadelphia Press.

Who Was to Blame?

Mary bought a bathing suit;
'Twas disappointing very.
While in the shop it looked quite cute.
It was a sight on Mary.
—Washington Star.

"Who is the responsible man in this firm?" asked the brusque visitor. "I don't know who the responsible party is," answered the sad, cynical office boy, "but I am the one who is always to blame."—Washington Star.

Weary Waiting.

She—What kept you so long at the racetrack, dear?

He—O, a mere matter of curiosity. I thought I would like to see the horse I bet on come in.—Town Topics.

"Judson thought he might pull through without making an assignment, but just as he was about arranging satisfactorily with his creditors——" "What happened?" "The bill for his wife's winter hat came in."

The Drag on Your Engine

You know the tightening strain on a belt is a dead drag which must be carried by belt and engine in addition to working load.

Just add up the total of this on your larger belts alone. It's tremendous.

It's what the engine must overcome and drive before a machine moves to produce.

What a waste in power, fuel, oil and wear and tear when CLING-SURFACE will stop it.

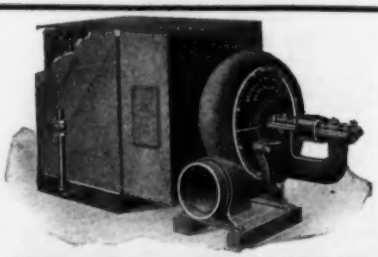
CLING-SURFACE will do this. There is no doubt about it. It will stop belt slipping everywhere and let them be run easy, preserve the belts and increase output.

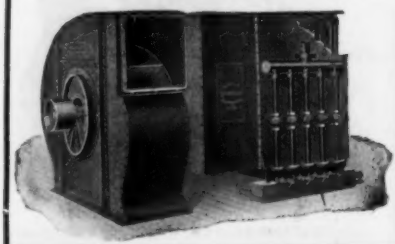
Then this saving of power can be used to make more goods. It's being done elsewhere. Ask us, or order on trial and test, paying if O. K.

CLING-SURFACE MFG. CO.,
199-205 Virginia St., Buffalo, N. Y.
BOSTON: 170 Summer St. NEW YORK: 39-41 Cortlandt St.
PHILADELPHIA: The Bourse.

Buffalo Fan System

HEATING—VENTILATING
DRYING
FOR TEXTILE MILLS
AIR CIRCULATION
UNIFORM — POSITIVE and
UNDER COMPLETE
CONTROL.





Buffalo Mechanical Draft Fans

Forced and Induced Draft.
Double your steaming capacity,
Raise your boiler efficiency,
CUT DOWN YOUR COAL BILL.

BUFFALO FORGE CO.,
BUFFALO, N. Y.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Green, Samuel M., Holyoke, Mass.
Suck, Adolph, 179 Summer St., Boston.

Attorney-at-Law.
Dawson, H. Horace, 309 Mutual Life Bldg., Philadelphia, Pa.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Harwood, Geo. S. & Son, 53 State St., Boston.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Bailing Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

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Bands and Labels.
Docker-Foster Co., Phila., Pa.

Baskets.
Crane Bros., Wesefield, Mass.
Lane, W. T. & Bro., Port Chester, N. Y.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jeffrey Manufacturing Co., Columbus, Ohio.
Main Belting Co, 1219 Carpenter St, Phila.
Popham, Henry, & Son, Newark, New Jersey.
Shultz Belting Co., St. Louis, Mo.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Mfg. Co., 168 Virginia St., Buffalo, N. Y.
Main Belting Co, 1219 Carpenter St, Phila.

Belt Hooks.
Bristol Co., Waterbury, Ct.

Bindings.
See Tapes and Braids.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.

Blowers, and Blower Systems.
American Blower Co., Detroit, Mich.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Mass. Fan Co., Waltham, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
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Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill, Me.

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Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.

Boxes Paper.
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Braiding Machinery.
New England Butt Co., Providence, R. I
Textile Machine Works, Reading, Pa.

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Burr Pickers.
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Curtis & Marble Machine Co., Worcester, Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
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Canvas Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Carbonizing.
Riverdale Woolen Co., Northbridge, Mass.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts, Phila.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co, 422 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston

Card Feeds.
See Automatic Feeds.

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Castings.
Livermore, Homer F., 85 Pearl St., Boston.

Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.

Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Riggs & Brothers, 310 Market St. Philadelphia, Pa.

Cloth Boards.
Chaffee Bros, Oxford, Mass.

Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Combs (Wool and Cotton)
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.

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Copper Gaskets.
U. S. Mineral Wool Co., 141 Liberty St., New York.

Copper (Perforated.)
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Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton-New Bedford Copper Co, New Bedford, Mass.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.

Cotton.
Blaisdell. Jr, Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.

Cotton Bale Ties.
DeHaven Mfg. Co., 30 Columbia Heights, Brooklyn, N. Y.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.

Cotton Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila., Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Colman, 11 Pemberton Sq., Boston.
Brownell, G. L., Worcester, Mass.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T., Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G, Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton, Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas., Woolen Machinery Co., Phila.
Whitin Machinery Wks, Whitinsville, Mass.

Cotton Openers and Lappers.
Atherton, A. T., Machine Co,, Pawtucket, R. I.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.

Cotton Softeners.
Bosson & Lane, Boston, Mass.

Cotton Waste.
Becker, C. W Agt, Amsterdam, N. Y.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Dating and Time Stamps.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Dextrine.
Elwell, Henry A. & Co., Philadelphia, Pa.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Mass. Fan Co., Waltham, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa
Phillips Co, The Thomas, Providence, R. I
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.

Dusters.
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Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.

Dyers, Bleachers and Finishers.
American Yarn Printing Works, 134-136 North 22d St., Philadelphia.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co., Kensington, Pa.
Greenwood, R & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Howard & Co., Rahway, N J.
Ingrahamville Dye Works, Pawtucket, R. I.
Kagermann, Edward, 1210 Orianna St., Phila.
Lawrence Dye Works Co., Lawrence, Mass.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co. Pawtucket, R. I.
Pennypack Yarn Finishing Co., Holmesburg Pa
Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
Union Knitting Mills, Schuylkill Haven, Pa
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W, & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Sedgeley Ave., Phila.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M., Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Baily-Rodgers Co., 34 Moore St., New York.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 84 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Corey, S. J, 273 Congress St, Boston
Cassella Color Co., 182 Front St., New York.
Dillon & Co, 20 Cedar St, New York.
Dubois, A. N., 2170 Sedgeley Ave., Phila.
Elwell, Henry A. & Co., Philadelphia, Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Ford, J. B. Co., Wyandotte, Mich.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klinstein, A. & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 123 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Linnehan, J. W. & Co., 185 High St., Boston.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Roessler & Hasslacher Chemical Co, 100 William St., New York.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
Vila, H. S., 115 So. 2nd St., Philadelphia, Pa

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
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Electrotyping and Printing.
Whitcomb, H C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., Lansdowne, Pa and 2123 Market St, Philadelphia, Pa.
Salem Elevator Works, Salem, Mass.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Employers Time Recorders.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Engine Stop.
Locke Regulator Co., Salem, Mass.

Exhaust Heads.
Burt Manufacturing Co., Akron, Ohio.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
The Sterling Blower & Pipe Mfg, Co., 44 Hupshope St, Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.

Fans—Exhaust and Ventilating.
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Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa
Scaife, W. B. & Sons, Pittsburg, Pa.

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Filters.
Automatic Water Purifying Co, 45 Broadway, N. Y.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Scaife, W. B. & Sons Pittsburg, Pa.

Finishing Machinery.
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Fluted Rolls.
Cohoes Foundry & Machine Co., Cohoes, N.Y
Thurston, A. G & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co, B F., Boston.

Friction Clutches.
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Friction Hoisting Drums
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.
Steam Boiler Equipment Co., 20 West Houston St., New York

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas. Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gauges
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

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Whiton, The D. E. Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.
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Heddles.
Steel Heddle Mfg. Co., 1242 Germantown Ave., Phila.
Watson, L. S, Mfg. Co, Leicester, Mass.
Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.
Hose.
Boston Belting Co., Boston.
Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Hosiery Boards.
Pearson, J. T, Kensington, Pa.
Wisconsin Mfg. Co., Two Rivers, Wis.
Humidifying Apparatus.
American Air Moistening Co., Boston.
Hydro Extractors.
American Tool & Machine Co., Boston.
Rusden Machine Co., Warren, R. I.
Ironing Machines for Knit Goods.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Jacquard Cards.
Rogers, H. E, South Manchester, Conn.
Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Weimar Bros, 1817 East York St, Phila. Pa.
Knit Goods Finishing Machines, Crochet, Etc.
Arnold Sewing Machine Co., 216 High St, Newark, N. J.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.
Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.
Knitting Machinery.
American Knitting Machine Co., 6th and Arch St, Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Babcock Machine Works, Fort Plain, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co. Lakeport. N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown. Pa.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller. Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
Paxton & O'Neill. 127 Bread St, Phila, Pa.
Pepper Mch. Works, Lakeport, N. H.
Ruth & Co., Norristown, Pa.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co. Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.
Knitting Needles and Supplies.
Breedon, Wm. & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co., Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick. N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn
Wardwell Needle Co. Lakeport, N. H.
Knotter for Spoolers.
Barber & Colman, 11 Pemberton Sq., Boston
Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa
Leather.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phil'a.
Leather Boards.
Rogers, H. E, South Manchester, Conn.
Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa. (For wire.)
Kilburn, Lincoln & Co. Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Ms,
Loopers.
Beattie's Machine Works, Cohoes, N. Y.
Lubricators
Dixon, Jos., Crucible Co, Jersey City, N. J.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.
Lumpers.
Gerry, George, & Son, Athol, Mass.
Machinery Dealers.
Grant & Williams, Park Row Bldg., New York.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia
Machinists.
New England Machine Co., Pawtucket, R. I.
Machinists' Tools.
Dodge Mfg Co., Mishawaka, Ind.
Whiton, The D. E. Co, New London, Conn.
Mails.
Walder, J, Paterson, N. J.
Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 54½ Hermon St, Worcester Mass.
Parks & Woolson Mach. Co., Springfield Vt.
Mechanical Draft.
American Blower Co., Detroit.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co, Buffalo., N. Y.
Sturtevant, B. F. Co., Boston, Mass.
Mechanical Engineers.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.

Green, Samuel M., Holyoke, Mass.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sturtevant Co., B. F., Boston.
Suck, Adolph, 179 Summer St., Boston.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Rusden Machine Co., Warren, R. I.

Mill Architects.
See Architects & Mill Engineers.

Mill Baskets.
Crane Bros., Westfield, Mass.
Lane, W. T. & Bro., Port Chester, N. Y.

Mill Broker.
Barrow, W. B., 130 N. 12th St., Philadelphia.

Mill Brushes.
See Brushes.

Mill Builders and Engineers.
Ferguson, John W. Paterson, N. J.

Mill Sewing Machines.
(See Sewing Machines and Supplies.)

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Chase Pulley Co., Providence, R. I.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Easton-Burnham Co., Pawtucket, R. I.
Houghton, E. F. & Co., 3rd and Somerset Sts , Phila.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Main Belting Co, 1219 Carpenter St, Phila.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Steel-Heddle Mfg. Co., 1842 Germantown Ave. Phila.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.

Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Oil Cups.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.

Oils.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Oil Seeds Pressing Co., 15-25 Whitehall St. New York.

Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.

Overseaming Machines.
Arnold Sewing Machine Co., 216 High St., Newark, N. J.
Merrow Machine Co., Hartford, Conn.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Von Buchwald, W. J., 120 No. 7th St., Phila.
Willcox & Gibbs Sewing Machine Co., New York.

Oxidizing Machinery.
Dubois, A. N., 2170 Sedgeley Ave., Phila.

Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.

Pantagraphs for Mill Engraving.
Johnson, C. A. & Co, 22 Dey St, New York.

Paper Tubes.
Sayford Paper Specialty Co., Camden, N. J.

Patent Solicitors.
Crosby & Gregory, 24 School St, Boston.
Siggers, E. G., Washington, D. C.
Straley, Hasbrouck & Schloeder, 257 Broadway, New York.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Perforated Metals.
Beckley, A. J. & Co., 248 Pearl St., New York.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Southern Bobbin Co., Greensboro, N. C.

Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St , Philadelphia, Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Press Boards and Fenders.
Rogers, H. E, South Manchester, Conn.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms
Hart, Charles, Frankford, Philadelphia.
Howard, Geo C., Lansdowne, Pa. and 2123 Market St. Philadelphia, Pa.
Phillips Co. The Thomas, Providence, R. I.
Spencer & Rideout, Nashua, N. H.
(Power, Screw, Hydraulic, Hollow Steam Plate).

Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.

Pulleys.
See Power Transmitting Machinery.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.

Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.

Raw Hide Gears.
New Process Raw Hide Co., Syracuse, N. Y

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Walder, J, Paterson, N. J.

Remnants.
Feingold, H. & D., 91 Bedford St., Boston.
Ribbons.
Cheney Bros, S. Manchester, Ct.
Ring Travellers.
DeHaven Mfg. Co , 50 Columbia Heights, Brooklyn, N. Y.
National Ring Traveller Co., Providence, R. I.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Rope Transmission.
Dodge Mfg. Co., Mishawaka, Ind.
Roving Cans.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.
Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.
Rubber Stamps.
Yenlo Co., York, Pa.
Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I
Sample Cards and Mounting.
Rosenberg, Henry, 107 Greene St., N.Y.
Scales
Sweet& Doyle, Cohoes, N. Y.
Scallop Machines.
Merrow Machine Co., Hartford, Conn.
Schools.
International Correspondence Schools, Scranton. Pa.
New Bedford Textile School, New Bedford, Mass.
Sewing Machines and Supplies.
Arnold Sewing Machine Co., 216 High St,. Newark, N. J.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Dinsmore Mfg. Co., Salem, Mass.
Fales, L. F., Walpole, Mass.
Goldstein, I., 505 Arch St., Phila.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Von Buchwald, W. J., 120 No. 7th St., Phila.
Willcox & Gibbs S. M. Co., New York.
Shafting Hangers, Etc.
See Power Transmission Machinery.
Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.
Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.
Shoddies.
See Wool Shoddies.
Shuttles.
See Bobbins, Spools, Shuttles, Etc.
Shuttle Checks.
Victor Shuttle Check Co., Auburn, N. Y.
Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.
Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.
Screens (Perforated.)
See under Perforated Metal.
Selling Agents.
See Commission Merchants.
Separators.
Draper Co., The, Hopedale, Mass.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Taunton-New Bedford Copper Co., New Bedford, Mass.
Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
Elwell, Henry A. & Co., Philadelphia, Pa.
O. K. Soap Co., 968 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.
Slashers.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.
Smoke Prevention.
Steam Boiler Equipment Co., 20 West Houston St , New York.
Soaps.
Elwell, Henry A. & Co., Philadelphia, Pa.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.
Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Vandergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.
Spindle Tubes.
Bamford & Smith, Pascoag, R. I.
Spinning Cylinders.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.
Spinning Frames.
See Cotton Machinery.
Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.
Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.
Spools. *See Bobbins, Spools Shuttles, Etc.*
Spooler Knotter.
Barber & Colman, 11 Pemberton Sq., Boston.
Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St., N. Y.
Wells, Wilfred, 505 W. Lehigh Ave., Phila.
Yenlo Co., York, Pa.
Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.
Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.
Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.
Steam Surface Coverings.
Keasbey, Robert A., New York.
Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jenkins Bros., New York.
Locke Regulator Co., Salem, Mass.
New York Lubricating Oil Co., 85 Water St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa
Rusden Machine Co., Warren, R. I.
Steam Boiler Equipment Co., 20 West Houston St., New York.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sturtevant Co., B. F., Boston.
Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, Warp Stop Motions.
Tanks, Tubs and Vats.
Davis, G. M. & Son, Palatka, Fla.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co., Warren, R. I.
Stearns, A. T. Lumber Co, Neponset, Mass.
Stevens, D. B. & Co., Auburn, Me.
Woolford, George, 2140 No. 9th St, Phila, Pa.
Tapes, Braids and Edgings.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo. W Philadelphia Pa.
Friedberger Mfg. Co, Germantown, Pa.
Hamilton, J. H. & Co., 84 Franklin St.,N. Y.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Weimar Bros, 1317 East York St, Phila, Pa.
Temples.
Draper Co., Hopedale, Mass.
Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.
Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.
Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.
Testing Machines.
Burke & Hanford, 631 Broadway, New York.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Phila telphia, Pa.
Textile Schools.
See Schools.
Thread Board for Spinning & Twisting Frames.
Houghton, L. T. Worcester, Mass.
Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.
Tickets and Labels.
Saranac Electrical Mfg Co. St. Joseph, Mich.
Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.
Trucks.
Slingsby H. C., 253 Broadway, New York.
Turbine Governors.
Replogle Governor Works, Akron, O.
Turbines.
(See Water Wheels.)
Twine Machinery.
Brownell, G. L., Worcester, Mass.
Twisting Machinery.
Brownell, G. L., Worcester, Mass.
Valves.
Boston Belting Co., Boston, Mass.
Locke Regulator Co., Salem, Mass.
Ventilating Apparatus.
Allington & Curtis Mfg. Co, Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Massachusetts Fan Co., Waltham, Mass.
New England Ventilating & Heating Co, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Warp Stop Motions.
Draper Co., Hopedale, Mass.
Washers (Cloth).
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philade'
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mas s
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Washing Soda.
Ford, J. B. Co., Wyandotte, Mich.
Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.
Water Purifiers & Filters.
Automatic Water Purifying Co., 45 Broadway, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.
Water Wheels.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.
Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.
Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.
Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.
Winders. (Hosiery.)
Altemus, Jacob K., Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y
Universal Winding Co, 95 South Street, Boston.
Wood Pulleys.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Saginaw Manufacturing Co, Saginaw, Mich.
Wool Cleaning Compound.
Ford, J. B. Co, Wyandotte, Mich.
India Alkali Works, Boston.
Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.
Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo. & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Woolen and Worsted Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila., Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch. Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co. Worcester, Mass
Fales, L. F, Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Harwood, Geo. S. & Son, 53 State St., Boston.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Kensington Machine Works, Mascher St., below Lehigh Ave., Phila.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A, 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.

Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.

Wool Oiling Apparatus.
Harwood, Geo. S. & Son, 53 State St., Boston.

Wool Shoddies.
Becker, C, W., Agt., Amsterdam, N. Y.
Riverdale Woolen Co , Northbridge, Mass.
Slack, Wm. H. H., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas., Machine Co., No. Adams, Mass.
Phillips Co, The Thomas, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Sargent's, C. G, Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARN, THREADS, ETC.

Banding.
Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Tucker & Cook Mfg. Co, Conway, Mass.
Toohey, M. J. & Co., Fall River, Mass.
Whittier Mills, Chattahoochee, Ga , Treasurer's Office, Springfield, Mass.

Cotton Yarns.
American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Ballou Yarn Co., Providence, R. I.
Blythe, Richard A., 114 Chestnut St., Phila.
Buckingham Paulson Co., 83 Leonard St. New York.
Catlin & Co, New York and Boston.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook. Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila. Pa.
Moeller & Littauer, 109 Greene St , New York.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
Orswell Mills, Fitchburg, Mass
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass
Whittier Mills, Chattaeoochee, Ga., Treas. Office, Springfield, Mass.

Cotton Yarns Wool Spun.
Broadbent, J. & Sons, Unionville, Conn.

Flax, Hemp, Jute and Ramie.
Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.
Ballou Yarn Co., rovidence, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.

Glazed Yarns.
Ballou Yarn Co., Providence R. I.
Blythe, Richard A., 114 Chestnut St., Phila.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Harness Twine.
Ballou Yarn Co., Providence, R. I.
Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Hosiery and Knitting Yarns.
Blythe, Richard A., 114 Chestnut St., Phila
Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave., Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic Mass.
Moeller & Littauer, 109 Greene St., New York.
Queensbury Mills, Worcester, Mass.
Skerry, A. T. & Co., 47 Leonard St., N. Y.

Mercerized Yarns.
Blythe, Richard A. 114 Chestnut St., Phila.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Harper, E. J., 395 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co , Philadelphia.
Montgomery, J. R. & Co., Windsor Locks. Conn.
Morgan, E. A., 54 Franklin St., N. Y.
Pennypack Yarn Finishing Co., Holmesburg, Pa.

Mohair Yarns.
Cranston Worsted Mills, Bristol, R. I.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.
Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
Moeller & Littauer, 109 Greene St., New York.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.
Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, N Y.
Moeller & Littauer, 109 Greene St., New York.
Ryle. Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.
Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eaton Rapids Woolen Mills, Eaton Rapids, Mich.
Eddy & Street, Providence, R. I.
Harper, E. J., 395 Broadway, New York.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
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Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T. & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Speed, James, 170 Summer St , Boston.

Worsted Yarns.
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COTTON SUPERINTENDENTS.

1337 **Assistant Supt.**, experienced in the manufacture of bookbinders' cloth, window shades, etc., is open to a position. English; 45 years of age; married. Prefers South. Best of references.

1853 **Supt Cotton Mill,** or would take an overseer's position in a large mill North for the present. Has been assistant superintendent for past year, previous to which he was overseer of carding for nine years, and before that was overseer of carding and spinning in the South. First-class references. Can take position at once. Colored and white goods. English and American machinery.

189 **Cotton Superintendent** wants position in Northern mill. Has been in charge of Southern mills for 7 years. Previous experience in N. E. Is well known among mill men, and can furnish the best of references. Age 39; married.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

2021 **Supt., Overseer of Carding,** assistant designer. Worked on sheetings and ginghams. Held position of overseer of carding and assistant to manager for past few years. Age 41; American. First class references.

2005 **Superintendent** of mill on plain cotton goods. Age 40; English; married. Some knowledge of designing. Has worked in a repair shop. Fair salary.

1532 **Supt.** of cotton mill, a thoroughly capable man, is open to a position. Well up on English and American makes of machinery. Has manufactured yarns both in American and Egyptian cottons, from 17s to 70s. About 40 years of age; Scotch. Has held a responsible position in a New England company for the past 10 years.

1806 **Wanted.** A position as supt. by an up-to-date man full of push and energy. A hustler and a good manager. Anyone needing a man to manage their mill will do well to correspond with him. Is up in woolen manufacture of flannels, blankets and jeans; in cotton of drills, sheetings, shirtings and cotton or jute bagging. Wages from $3 to $4 per day and house rent free. Has had long experience on above goods, especially in weaving.

1975 **A Linen Manufacturer,** who thoroughly understands linen and cotton fancy goods and damasks, is open to position as Supt. 40 years of age, Irish, married. Can refer to well-known mill owners. Terms reasonable.

1938 **Supt.** or Supt. and Designer. Age 33; Scotch; married. Fine and plain fancy ginghams, shirtings, fine sheer fabrics, cotton and worsted dress goods, plain and Jacquard silks and Jacquard bed quilts, also print cloths. Crompton & Knowles looms. All kinds of winding, beaming, warping and quilting machinery, also finishing. At present studying picking, carding an spinning machinery.

2011 **Wanted,** a position as assistant superintendent of a fancy weaving mill, by a man having a thorough practical knowledge of weaving and designing. Age 32; married.

WOOLEN SUPERINTENDENTS.

1841 **Superintendent.** Was eight years in every department and acted as assistant in England. Wants to get a start in this country. Would take position as assistant superintendent, designer, or assistant designer. Has had experience on high grades of plain and fancy woolens and worsteds, as well as army kerseys and cotton worsteds.

1930 **Asst. Supt.**, woolen or worsted, or over seer of twisting, spooling, dressing. Age 40; American; married. Is familiar with English and American machinery. Excellent references.

1974 **Asst. Supt.** or Designer, woolen or worsted, who understands designing and also the work of every department. Has worked on fine worsteds, coverts, cheviots kerseys, meltons and fancy cassimeres. Technical education acquired at Phila. Textile School. Six years' practical experience, three as designer. Age 24, American, good references. Will go anywhere.

1936 **Supt. or Designer,** an American, married. 38 years of age, is desirous of obtaining a position. Understands the manufacture of worsteds, cotton worsteds, cassimeres, meltons—steam face, flannels, and horse and bed blankets. Long experience and up-to date in methods. Moderate wage.

1976 **Manager and Buyer,** blankets, rugs and government cloths. Young Englishman, 30, managing a plant of 19 sets cards and 200 looms in England, desires similar position in the States. Thoroughly practical in every department. Salary according to results.

1982 **Supt.** of large experience in the manufacture of woolen and worsted fancies and suitings, is open to an engagement as supt. or designer. Age 45; American; married. Good references.

1983 **Supt. and Designer** of woolen and worsted dress goods or men's wear, is open to a position. 42 years old; American citizen of German extraction. Familiar with jacquard work as well as dobby. Good references.

1829 **Woolen Supt.**, or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres and fancy cottons, etc. Is familiar with Davis & Furber jacks and mules, and Crompton & Knowles.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worsteds, overcoatings, etc. Good references.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

1537 **Woolen Superintendent, Designer or Weaver.** Has worked on all classes of woolens, worsteds, cotton worsteds, fancy cassimeres, etc., and is acquainted with all Eastern makes of machinery. American. Age 34; married.

WOOLEN CARDERS.

1953 **Boss Woolen Carder,** experienced on all classes of wool, all cotton, wool and cotton, and shoddy mixes, desires a position. Is an American; married; 40 years old. Leaving present position on account of shutdown. Is steady, reliable, and can give good references from last employers. Three workers in family.

1617 **Boss Carder or Second Hand.** Has held several first class jobs also has had experience in spinning. Can accept position at once. All grades of stock, including shoodies, and cotton and wool and all wool.

2000 **Secondhand Carder** familiar with all wool, wool and cotton and shoddy mixes on Davis & Furber and Furbush cards would like to obtain a position. 21 years old, American. Good references.

1944 **Carder,** or carder and spinner. Age 43; married; American. Has worked on all kinds of woolens, and of late on shoddy and cotton mixes. Is familiar with Davis & Furber machines. Excellent reference from past employer.

1903 **Boss Carder,** woolen or worsted mill, desires a position. Experienced on fine and coarse work; 27 years of age; American; married. Can refer to responsible parties. Moderate wages desired. Will go to any part of United States.

COTTON CARDERS.

1968 **Overseer** of cotton carding and combing, who understands setting up and starting new machinery, is open to a position. 33 years old, English, married. Is especially good on fine combed Egyptian and Sea Island yarns. Best of references. Moderate wage.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1932 **Overseer of Carding** or would take assistant superintendent position. Age 27; American; single. Carded and combed American, Egyptian and Sea Island Cotton, making yarns from 8s to 100s; both plain and colored goods. Can come at once.

1718 **Overseer of Card Room** desires a position in cotton mill. About 26 years of age, steady and strictly temperate. Has been six years second hand and two years overseer. Best of references.

1991 **Secondhand Comber** or Carder who is at present handling 75 cards and eight combs, is open to a position. 30 years old, French, married. Is familiar with all well known makes of machinery. Good references. Terms reasonable.

2001 **Overseer of Carding** who has had experience in some very large cotton mills in Massachusetts wishes to obtain a position. Understands the running of both coarse and fine goods and is familiar with all makes of cards. 41 years of age; American; married. Good references. Moderate wages.

2022 **Overseer of Carding.** Age 47; American; married. Worked on both wool and cotton. Is familiar with Davis & Furber and James Smith machinery.

WOOLEN SPINNERS.

1927 **Overseer Spinning,** carding or flyers. 37 years old; married, and can furnish best of references. Twenty-three years' experience. A German.

1969 **Overseer** of woolen spinning would like a position in a good mill. Has worked on woolen, cotton mixes, and shoddies from 1 to 3lbs. 26 years of age temperate and steady. Good references.

1987 **Overseer** of woolen spinning desires to make a change. Is familiar with suiting, union, cassimere, satinet and knitting yarns and all ordinary makes of machinery. 30 years of age; American; married. Good references as to character and ability.

1956 **Overseer Woolen Spinning,** 34 years old, American, married, desires position. Understands Johnson & Bassett, Davis & Furber, Cleveland Bros. and Woonsocket mules; and has made all wool, merino and shoddy mixes. Can give good references.

1941 **Boss Spinner.** Wants $3.50 or more. One daughter a spooler and twister. Excellent references. Is familiar with Davis & Furber, Johnson & Bassett, and other makes of machinery.

COTTON SPINNERS.

1960 **Overseer of Cone Winding** and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4s to 160s; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills.

1950 **Overseer** or second-hand of cotton mule spinning desires a position in the Southern States at reasonable wages. Is a good fixer and has made yarns ranging from 4s to 40s. 39 years old; German; married. Best of references. One worker in family—drawer in.

2009 **Overseer Ring Spinning,** spooling and warping. Might accept a good secondhand job. Age 43; American; married. Ten years' experience as secondhand, and last six years been overseer. Worked on white work from 4s to 38s.

2020 **Overseer of Ring Spinning** or asst. supt. Age 29; English; unmarried. Is familiar with all grades of cotton. Good experience and excellent references.

2003 **Overseer of Mule Spinning** who has had a wide experience in large New England mills on yarns ranging from 24s to 160s is open to a position. 37 years old; American. Good references.

1690 **Cotton Mule Spinner.** Age 42; French; married. Has worked on prints and sheetings and on yarns from 9's to 50's. First class references. Two years' experience as secondhand and five as overseer. Wants $2.50 per day to start with.

1519 **Overseer Spinning.** Age 31; American; married. Has worked on yarns from one run to 5¼. Will accept an average salary. At present employed, but wishes to better himself.

WOOLEN WEAVERS.

1959 **Boss Weaver**, who is familiar with cotton, woolen and worsted looms and all classes of goods, is open to a position in a large mill. 46 years of age; American; married. Strictly temperate and is recommended by some very large N. E. woolen and cotton mills.

1964 **Boss Weaver**, familiar with all makes of woolen and worsted machinery, and who has worked on ladies' dress goods and men's wear, desires a position. 39 years of age; American; married. Can give good references.

1949 **Boss Weaver**, capable of taking entire charge of a small woolen mill, will be open to a position in a few weeks. 44 years old; American; married. Familiar with all classes of woolen and worsted goods. Good references. Three workers in family.

2019 **Boss Weaver** or assistant designer. Wants position with a firm who is willing to advance a man as he proves himself worthy. 28 years old; married, and a steady worker. For past six years worked in all parts of the weave room and pattern room, pattern weaving and dressing, chain building, harness raising, perching, fixing and regular weaving. Now taking course of study in woolen and worsted designing. Excellent reference.

2008 **Overseer of woolen** or worsted weaving. Would consider second hand or good fixing job. Age 37; married; American. Wants N. E. States. Worked on all classes of woolen and worsted goods, including paper makers' felts. All kinds of harness looms.

COTTON WEAVERS.

1992 **Boss Weaver** who also understands the management of drawing-in, pattern and slasher rooms, is open to a position. Is familiar with all ordinary makes of cotton looms and has handled ginghams, Shirtings, dress goods, etc. 36 years old, American, married. Good References

1985 **Overseer** of cotton weaving, thoroughly familiar with the weaving of cotton duck, sheetings, drills, twills, stripes, osnaburgs, and all plain goods is open to a position. Understands Lowell, Crompton & Knowles, Draper, Lewiston, Whitin, Bridesburg, English and Clipper looms, and several other makes. 34 years of age, American, married. Terms reasonable. Good references.

2016 **Overseer of Weaving.** Age 35; Scotch; married. Good experience, and excellent references. Crompton, Whitin, Lowell, Colvin, Woonsocket and English looms. Sheetings, lawns ginghams, flannels, fine worsteds, dress goods, shirtings and novelty goods.

2006 **Overseer of Weaving**, drawing and slashing. All classes of cotton goods and machinery. Age 49; married. Good experience.

1998 **Boss Weaver** at present handling about 1,000 looms on fancy and plain goods, wishes to obtain a position. Familiar with Stafford and Crompton heads, Mason Kilburn, Lincoln, and Whitin looms. 39 years old; English; married; 3 weavers in family. Good references.

DESIGNERS.

1996 **Designer or Assistant Superintendent** desires a position. 27 years old; Scotch; married. Familiar with all well known makes of machinery and with woolen, worsted and cotton goods. Good references. Will go to any part of the United States. Terms reasonable.

1997 **A Young Man**, 23 years of age, English, would like a position as assistant designer or boss weaver. Has worked on woolen dress goods, cloakings, suitings and worsted suitings. Good references. Moderate wages. Three weavers in family.

1962 **Designer**, boss weaver, or both, desires a position in a woolen or worsted mill. Is at present employed as designer and boss weaver on worsted and woolen dress goods and suitings, and giving satisfaction. 30 years old; Swede; married. Expects moderate salary. Will go to any part of the United States. References from well-known textile men.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

KNITTERS.

1554 **Boss Knitter.** Underwear, Jersey ribbed, lisle, wool, plaited work, silk. Can handle any latch machine. Good references. Age 26; married.

1945 **Asst. Supt.**, or overseer of a large stitching department in knit underwear mill. Willcox & Gibbs sewing machines, Union Special and loopers.

1951 **Overseer** of cuff knitting, who thoroughly understands fixing Tiffany and Cooper machines, wishes position. 45 years of age; English; married. Good references

1939 **Boss Knitter.** Age 42; English descent; married. Has one girl who is a winder. 11 years as foreman knitter in one mill, and for the past seven years in full charge of knitting and winding in a mill, but wants to change on account of locality. Campbell & Clute, Tompkins and Crane machines. Balbriggan underwear, fleece lined and two-thread work, also fancies. Worked mostly on woolen goods.

1906 **Supt. or Agent** of a hosiery mill is open to a position. Thoroughly understands spinning, dyeing and is familiar with all well-known makes of knitting machinery. American; 2[illegible] years old; single. Has been superintendent for the last seven years in a large plant. Best of references.

1993 **Boss Knitter and Fixer** on ladies' and gents' ribbed underwear on S. & W., N. & T., M. & W., B. & D., S. & H., Huse, Champion, S. & F. machines is open to a position in any part of the United States. 30 years old; American; married. Good references. Wants $4.

Manager or Superintendent.

Wanted by a practical man on both hosiery and underwear, a position in the South, North Carolina preferred. At present am manager of an A1 underwear mill in the North, but compelled to resign on account of the severity of climate. Address, "Supt.," care of Textile World, Boston.

Grasp the opportunity now almost out of your reach, and get a good technical education in textiles. The

FREE SCHOLARSHIPS IN TEXTILES

and other Engineering courses, which, through the generosity of the founders of the school, we have been able to offer are almost exhausted, and on September 30th, the opportunity will positively be

WITHDRAWN.

Applications for the remaining scholarships will be considered strictly in the order received, and those post-marked later then September 30th can be accepted only at our regular tuition, $50.00.

Successful applicants will be expected to bear the expense of postage and instruction papers.

¶ The instruction is based upon a thorough grounding in Mathmatics, and embraces Cotton, Woolen and Worsted Spinning, Warp Preparation, Loom Fixing, Weaving, Textile Design, Fabric Structure and Cloth Analysis, Woolen and Worsted Finishing, Knitting, Textile Chemistry and Dyeing.

¶ Handbook giving detailed information, and describing our courses in Mechanical, Electrical, Stationary, Locomotive, Marine Engineering, Heating, Ventilation and Plumbing,—and Mechanical Drawing,—together with regular terms sent upon request.

American School of Correspondence,
BOSTON, MASS., U. S. A.

DYERS.

1972 **Boss Dyer** of large experience on cotton, cotton and wool, shoddy waste, camel hair raw stocks; all wool flannels, ladies' dress goods, worsteds, friezes and Union piece dyes; and skein dyeing, hosiery, etc., is open to a position in a woolen, worsted or hosiery mill. 50 years of age, English (naturalized), married. Best of references. Terms moderate.

1995 **Boss Dyer** who has been 12 years in a large Connecticut woolen mill is open to a position with any good concern. 40 years old; American; married. Piece dyes, yarns, mohair, wool stock, indigo vats, fancy shoddies and raw cotton. 17 years' experience. Good references. Terms moderate.

1979 **A Boss Dyer**, who has been assistant dyer in one of the largest mills in the United States for the last ten years, is desirous of making a change. Is familiar with wool slubbing, worsted yarn, and pieces; cotton raw stock, skein and warp yarn, pieces, and also Union goods. Understands all modern dyeing machinery. Best of references. Salary moderate.

1966 **A Color Mixer**, chemist or cotton piece dyer is open to a position. English; 30 years old; married. Was assistant manager of large print works in England for three years, and can refer to well-known men. Terms moderate.

2013 **Superintendent** of dyeing and finishing, or assistant manager of a woolen mill where dyeing and finishing is done. Can design. Age 41; English; unmarried. Worked on all classes of woolen and worsted goods, cotton linings, cotton velvets and plushes. To secure permanent position is willing to start for small salary.

FINISHERS.

2004 **A Boss Finisher** of over 25 years' experience on fancy cassimeres, worsteds, dress goods, serges and a large variety of steam finished goods, beavers, kerseys, cloakings, meltons, cheviots, etc., is open to a position. 44 years old; American; married. Good references. Moderate terms.

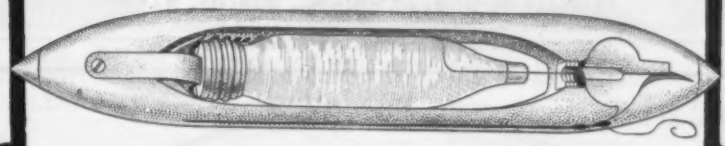
1990 **A Foreman** in Finishing room on all kinds of cotton piece goods. Accustomed to all kinds of folding, packing, etc., and machinery used therein. English, married, age 36. Five years in last situation. Has been in this country 12 years. Can give references from present and past employers.

1958 **Boss Finisher** of underwear, cotton or wool mixed goods, who understands Wheeler & Wilson buttonhole machines, Union Button, Union Special, etc., is open to a position in the New England or Middle States. 30 years; American; married. Been employed for a number of years by concern for whom he is now working. Exceptionally good references.

1921 **Boss Finisher** of a satinet mill or secondhand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

1970 **A good Second-hand Finisher** who thoroughly understands Union cassimeres, meltons and satinets, would like a position. 30 years of age, American, married. Well up on all well-known makes of machinery, and capable of taking a boss job. Good references. Reasonable wages expected.

Are You a Shuttle?



Think. Are you always going—shuttle-like—but not advancing? We can train you to advance. We have trained hundreds in your line of work for better salaries and positions, and we can do the same for you. Let us try it. Mark **X** in the coupon before the position you want, cut it out, and send to us with your name, address, and occupation. By return mail, we will explain our method of training. Don't delay.

International Correspondence Schools,

Box 860, Scranton, Pa.

Please explain how I can qualify for the position marked **X** below.

	Cotton Mill Supt.		Woolen Designer		Elec. Engineer		Chemist
	Boss Cot'n Carder		Cotton Designer		Electrician		Navigator
	Boss Cot'n Spinner		Mech. Engineer		Steam Engineer		Bookkeeper
	Boss Cot'n Weaver		Mech. Draftsman		Marine Engineer		Stenographer
	Woolen Mill Supt.		Machine Designer		Civil Engineer		To Speak French
	Boss Wool. Carder		Mech. Draftsman		Surveyor		To Speak German
	Boss Wool. Weaver		Foreman Machin't		Architect		To Speak Spanish

Send in the Coupon Today

MISCELLANEOUS.

1994 **Wanted** a postion in either mill or selling office of a textile manufacturing business by an American of extensive practical and theoretical knowledge in all textile branches, well versed in German and French. Age 28 years. Can furnish best of references.

1988 **A Young Man,** 23 years of age; American; who has had 18 months' experience in a woolen mill and is at present a student in a textile school, is willing to begin at the bottom of the ladder with a good mill where there is prospect of advancement. Small pay to start. Good references.

1980 **An Expert** on soap making and wool scouring will be open to a position shortly. Is familiar with the treatment of all grades. About 40 years old. English; married. Has worked for one concern in the United States for 12 years.

1981 **Master Mechanic;** 46 years of age; American; married; who has been employed in large cotton mills in the country is opened to a position. Is a practical man and thoroughly understands cotton machinery. Best of references from well known mill men.

1924 **Assistant Supt.,** boss spinner and boss dresser desires a position in a woolen mill. 39 years of age; an American; married. Has worked on all classes of woolen goods on both English and American machinery. Good references from former employers. 15 years' experience.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the Southern States or would go to Cuba or Puerto Rico. Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

2017 **Loom Fixer.** Age 44; Irish; unmarried. Crompton & Knowles' Stafford and Jacquard. Can take position at once. Good references.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

2024 **Master Mechanic.** Age 28; English; married. Served seven years' apprenticeship in England to millwright engineering. Is familiar with engines, dyeing and bleaching machinery, cotton machinery and paper mill machinery.

2023 **Foreman of Repair Shop.** Age 30; American; married. Several years' experience in cotton mill repair work. Is familiar with almost any kind of machinery as far as repairs go.—Lowell Machine Shop, Hetherington, Kitson, Providence, Biddeford, ect.

1866 **Overseer of Burling** and Sowing or Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

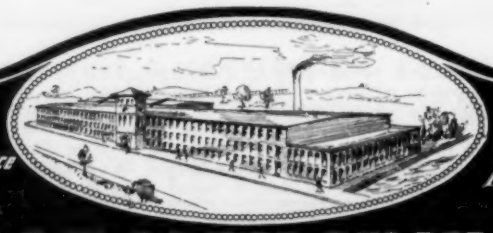
ARTHUR F. GRAY,

Mill Architect and Engineer,

Exchange Building, 53 State St., BOSTON, MASS

Plans and Equipment of Cotton and other Textile Mills a specialty.

Valuation of Mill Properties



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TEXTILE MILLS
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PLANS, SPECIFICATIONS, DETAILS AND SUPERINTENDENCE FOR CONSTRUCTION, EQUIPMENT AND ORGANIZATION OF COTTON, WOOLEN, WORSTED, SILK AND OTHER TEXTILE MILLS

INDUSTRIAL PLANTS OF ALL KINDS DESIGNED TO MEET THE REQUIREMENTS OF MANUFACTURERS.

ORGANIZATION AND EXTENSION OF OLD PLANTS.

SAMUEL M. GREEN,

Consulting and Supervising Engineer for the

RECONSTRUCTION OF POWER PLANTS

And General Textile Mill Construction,

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JOHN W. FERGUSON,

Builder and General Contractor.

MILL BUILDING A SPECIALTY. References made to some of the largest mill owners in the Middle States, including Clark Thread Co., Newark, N. J., Barbour Flax Spinning Co., Paterson, N. J., and others.

253 Broadway, New York. *90 Washington St., Paterson, N. J.*

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The new Starch which is proving such a great success.

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Bindings, Webs etc.

HAMILTON MILLS. **Spool Tapes** and Stay Bindings.

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SELLING AGENTS for MILLS

Manufacturing Cottonades, Cheviots, Sheeting, Shirting, Drilling, Duck, Kerseys, Plaids, Tickings, Hosiery, Towels, Seine, Twine Cotton Batting, Knitting Cotton, Ball Thread, Wrapping Twine.

Office and Sample Room, 30 Haney St, CHARLESTON, S C

WILLIAM B. CHARLES,

Cotton Yarns, Cotton Cloth, Silesia, Sateens

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TAPES—BRAIDS—THREADS

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GEORGE W. CHAPIN,

Successors to FLEMING & CHAPIN.

YARNS 229—CHURCH ST.—231 PHILA.

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KROUT & FITE MFG. CO.,

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Spool Tapes a Specialty.

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Slingsby's Patent.

Runs both ways and Spins like a top.

Wool Trucks,
Yarn Trucks,
Cloth Trucks,
Dye House Trucks,

IN FACT,

ANYTHING IN TRUCKS.

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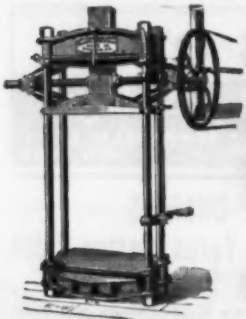

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IMPROVED UPRIGHT SPOOLERS

TO SPOOL FROM COP, SKEIN, OR BOBBIN.

Knitting and Weaving Yarns

Cones, Cops, Warps, Skeins,
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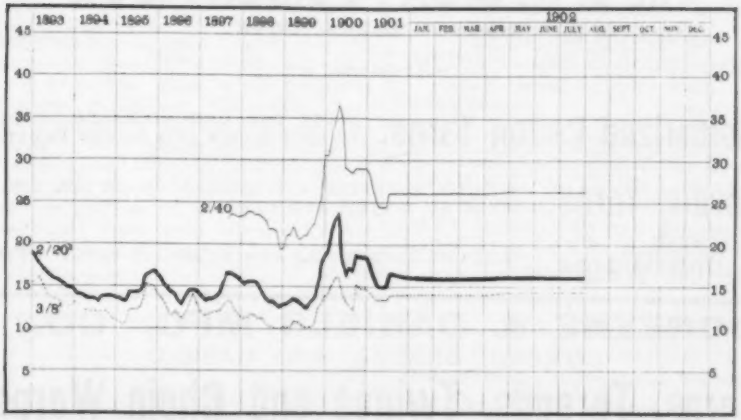
YARN DEPARTMENT.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

There has been no material change for the better on this market during the past months. While an improved demand developed to some extent, it was met with offers that effectually prevented any advance in prices. Production, in spite of curtailment, is still far in advance of the demand for cotton yarn. Until these factors are more evenly balanced it is idle to expect any improvement in prices, which spinners claim are below the cost of production. Egyptian and Sea Island yarns are strong, owing to the scarcity of such grades, and the high cost of the raw material. In the low grades, the cost of yarn is but a secondary factor in regulating selling price, simply because the conditions are diametrically opposite to those found in the fine yarn trade.

We quote as follows:—

Cops.

6s	14½
8s	15
10s	15½
14s	16
16s	16½
22s	16½
24s	19
26s	19¾
30s	21¼
34s	22
36s	23
40s	24

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carder Peeler.

12s	16½
14s	17
18s	18
20s	18¾
22s	19¼
26s	20
28s	20
30s	20-21
36s	22
40s	23
45s	27
50s	31
55s	34
60s	39-40

Eastern Two-Ply Warps, Carder Peeler.

2/30s	20-21
2/36s	22-23
2/40s	24
2/45s	28-29
2/50s	32-33
2/60s	41-42

Egyptian Weaving Yarns.

Single Skeins Combed.

30s	32-33
35s	35
40s	37
45s	39
50s	42
55s	45
60s	50
70s	59
80s	70
90s	72-74

Two and Three Ply Skeins, Combed.

30s	36-37
36s	38-39
40s	39-40
45s	41-42
50s	45-46
55s	48-49
60s	50-51
65s	55-56

Philadelphia Yarn Market.

There has been considerably better demand for yarn this month, but prices have not improved, largely on account of the disposition of holders to dispose of stocks. Spinners claim yarn for prompt delivery has been sold below cost of production, based on present cost of cotton, and a number of Southern mills have

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK,

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

Cotton Warps

HOUSATONIC, MASS. 4s to 60s.

OIL SEEDS PRESSING COMPANY,

Manufacturers and Importers of

VEGETABLE OILS.

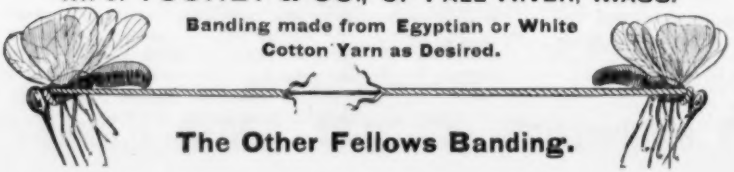
15 to 25 Whitehall Street, - - New York.

BALLOU YARN COMPANY, PROVIDENCE, R. I.

GASSED YARN, Harness and Seine Twines and other Job Gassing, Winding, &c. All Numbers. **SPECIALTIES**

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

shut down, waiting for an improvement in the conditions. The outlook for the fall trade is good, and a number of orders have been placed for delivery on the new crop of cotton. Some of the trade are disposed to discount the cotton crop, while others are working in a very conservative way, fearing cotton and yarn will be higher when the fall trade opens.

Egyptian yarns are steady and firm at advanced prices and the demand continues good. Prices today are about as follows:—

7s and coarser	14
8s and 9s	14-14¼

Southern frame cones (good quality):—

10s	14-14¼
12s	14¼-14½
14s	14½-14¾
16s	15
18s	15½
20s	16
22s	16½
24s	17
26s	17½
30s	18
40s	25
50s	31

Southern high grade mule yarn:—

Cones.

10s	15¼
12s	15¾
14s	16¼
16s	16¾
18s	17¼
20s and 22s	17½-18
24s	18½

Southern frame yarn, lower grades:—

6s and 8s	13½-13¾
10s	14

Eastern cones (high grade quality):—

10s	16
12s	16½
14s	17
16s	17½
18s	18
20s and 22s	19½

Lower grades, Eastern yarn:—

6s and 8s	
10s	

Rise ¼c. per number to 16s.

Besides this, there is some comber waste used, that is made into 8s and 10s cones and sold at 14 to 14½.

Skein yarn (mostly Southern):—

4s to 6s soft	14
10s to 12s	14½
14s to 20s	14½-15
22s	15½
14/2	14¼-14½
16/2	15
20/2	15-15½
30/2	17-17½
40/2	22-23

RICHARD A. BLYTHE,
Commission Merchant,
Cotton Yarns of every description.
114 Chestnut Street, - PHILADELPHIA.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago. Ills
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
FOR ALL PURPOSES.
122-124 Chestnut St., PHILADELPHIA, PA.
Brown Building 185 Summer St., BOSTON, MASS.

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished.

J. S. DODDS,
346 Broadway, N. Y. Life Bl'd'g., New York, N.Y.

MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

MOELLER & LITTAUER,
IMPORTERS AND MANUFACTURERS OF
Silk, Worsted, Woolen, Cotton & Mohair Yarns and Tinsel. Chardonnet Artificial Silk.
Mercerized, Turkey-Red, Swiss Emb. Yarns.
109 Green St, NEW YORK.

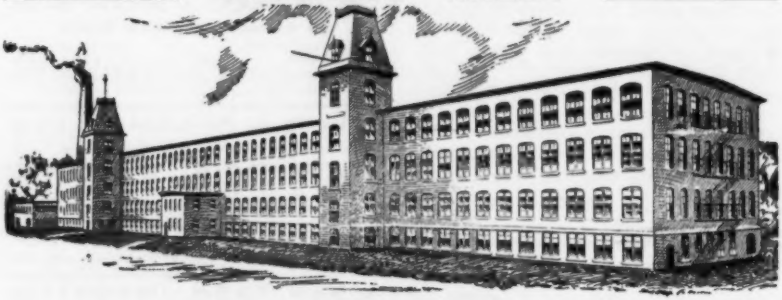
E. C. HARPER,
WORSTED AND WOOLEN YARNS,
MERCERIZED COTTON,
395 Broadway, New York.
Tel. 1828 Franklin.

Eddy & Street,
COTTON, WOOLEN, **YARNS** AND **BRAIDS** WORSTED, SPUN SILK.
PROVIDENCE, R. I.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20,000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

Indian Orchard Company.

Cotton Warps and Yarns. In Gray and all Colors, Single or two or more Ply, and Cable Cord.

Novelty Yarns. in Various Patterns, Colors and Twists.

Carded and Colored Cotton. For Mixing with wool; Machined or in Roving.

Indian Orchard, Mass.

E. MORGAN, PRES. H. K. WRIGHT, TREAS. W. C. GODFREY, AGT.

16/3 slack	15
12/3 slack	14½
8/3 carpet	13½-14

Skein yarn (mostly Southern):—

8/3 slack	14
9/4 slack	14

Warps (mostly Southern):—

14s to 16s	14¼-14¾
20s and 22s	15-15½
26s	16
14/2	15
16/2	15
20/2	15-15½
24/2	16
30/2	17
40/2	23
40/1	24

Mixed colored yarns (mock twist, half colors):—

6s to 40s	16
12s to 14s	16½-17
16s to 18s	17½-18½

Silver and jaeger, 1½ to 2c. over white.

Mock Egyptian, 3c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Worsted Yarn.

Spinners are running old orders very nearly out and are looking for new orders at advanced prices. Some of the orders just completed were taken over one year ago and the buyers would like to continue at the same prices. The fact is pointed out that prior to the placing of these orders last year trade was in a deplorable condition and spinners were unable to purchase their wool supply on a low basis and thus were unable to accept orders on a low basis.

Having established this fact spinners show that on a conservative estimate they must sell yarn for from 3 to 7 cents per pound over the figures made at the last sales. Of course there are manufacturers who purchased too late and last year paid more than the rock prices, but we are dealing with figures from the lowest estimates and prices show an advance which weavers are paying without much comment.

The advance is largely on the finer grades of yarn. On 1/4 Blood and 3/8 Blood an advance will take place later. Some weavers have succeeded in placing orders at old prices, but the spinners regret offering these prices and are asking more for further orders. While spinners are asking higher prices, weavers are in no hurry to cover and most of the buying has been on yarn for staple cloth, such as Clay worsteds and serges.

The demand for Clays has improved, but is not great in volume. Serges are having a good demand and yarn for this class of cloth is in good demand and some good orders have been placed.

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
316 Church St., New York.
306 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mill's, Oneida Co., - N. Y.

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
PAWTUCKET, - R. I.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON WARPS
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

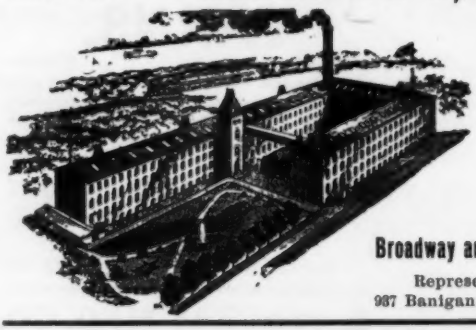
GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. WARPS

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
E. A. MORGAN & CO.,
54-56 Franklin St., N. Y. City.

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.
Philadelphia.

HOWLAND CROFT, SONS & CO.



LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes

Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns — white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS — of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 220 CHESTNUT ST., PHILA.

SAVOGRAN

CLEANS WOOL, FLOORS ANYTHING.
INDIA ALKALI WORKS, Boston.

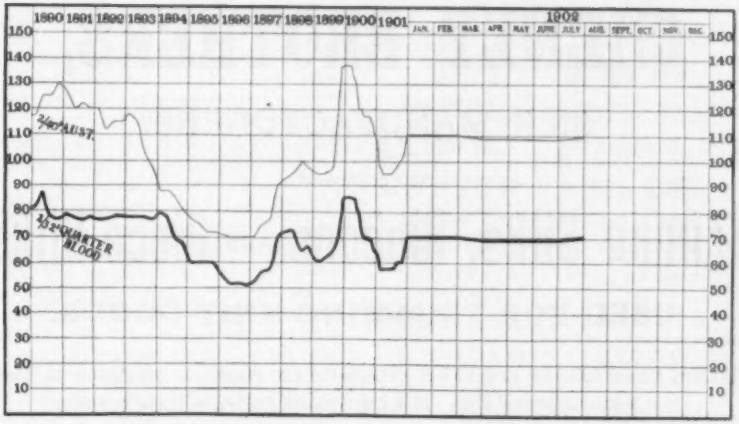


CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

Many more orders will be placed as the season advances, although some buyers of cloth are trying to buy for less than last year.

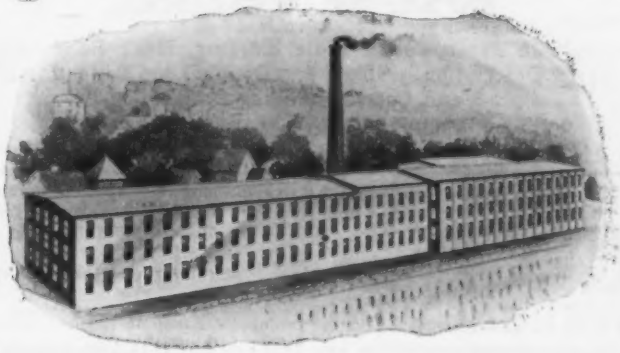
In this they are unsuccessful. Weavers in a half hearted way try for lower prices on yarn, without being able to get lower prices and then acknowledge that they expected no concession and write their customers that, as a favor, they will get out samples for them but to place their order with some other mill.

Some weavers are keeping very cool over the situation and will place no orders until the situation is more defined. This is the positive position of the weavers as most of them are acting in the same way.

Said one large weaver: "We can give you some good orders for yarn if you do not advance your price beyond reason. We are not making so many goods requiring this yarn this year as last and will concentrate our business with you, but if you advance we will buy elsewhere.

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

QUEENSBURY MILLS,
FLYER SPUN



MOHAIR TOPS AND YARNS FOR WEAVING.
LUSTRE YARNS FOR SERGE LININGS.
Worcester, Mass.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut St., PHILADELPHIA.
79 Chauncy Street, BOSTON.
186 Franklin Street, CHICAGO

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

64 Howard St., cor. Mercer St., - NEW YORK.

WM. M. YOUNG,

Manufacturers of

Worsted Spindle Tapes, Cotton Mule Banding, Hook Bands and Hooks of Every Description. Single and Double Loop Bands for Mule and Cotton Spinning Frames.

Office and Factory: 2421-23 MASCHER STREET,

Factories: 3638-40 Frankford Ave. 3681-33-35-37-39 Emerald St.

PHILADELPHIA, PA

FIRE HOSE CORDS — From long staple cotton — 6s to 20s yarn in 2 to 100 ply — 16 lbs. without a knot.

COTTON WARPS — On beams—single or ply yarns, grey, bleached or colored.

GLAZED YARNS — All plys—any color — for braiders, harness and sewing threads.

UNIVERSAL WIND — For braider cops — warp yarns — grey or colored — 2 inch to 12 inch traverse.

Dyeing facilities are new and best quality work guaranteed.
We are prepared to dye yarns for other parties.

WHITTIER MILLS, Selling Office, Springfield, Mass.
Mill, Chattahoochee, Ga.

Some weavers state that they will place no orders until the market is developed, that they knew that they would want yarn and expected to use their usual amount but did not know what the trade would take hold of and therefore must wait until the end of this month, when the yarn question would have consideration. Others state that while they wanted to buy yarn would not place an order at any price until they had sample pieces on the market, when they would buy extensively. It was stated that prices were higher, but the manufacturer said he could only pay a reasonable price. If the advance was too great he would be obliged to put cotton worsted on the market. For all this we believe that spinners will have but little trouble in disposing of productions and we believe before the season is over that there will be a scarcity of worsted yarn. It is claimed there is much worsted yarn spun out of low priced wool and that prices would be made at a very low level. Whether this will prove true remains to be seen.

French spun yarn spinners continue busy with prices firmly maintained. The demand for underwear out of French spun yarn has slackened off and the spinners are now turning their machinery on yarn for weavers and hosiery manufacturers.

The hosiery manufacturers are complaining at the fact that although the price of yarn has advanced, that they can get no more money for stockings. It is also a fact that spinners have advanced the price of yarn to such an extent that certain classes of underwear were no longer profitable to manufacture.

The dress goods weavers are busy and are unable to secure yarn at old prices.

We quote as follows:

2/40s Australian	1.12½
2/40s XX Delaine	1.01½
2/40s Half Blood	1.00
2/20s Half Blood	.85
2/36s ⅝ Blood	.75
2/26s ¼ Blood	.68

Woolen Yarn.

Spinners continue busy on old orders; some spinners can see the end of these orders and are working hard for future business although many spinners have orders which will last until December.

Hosiery manufacturers are using much merino yarn at this time and must soon be on the market for further yarn as the new season is fast approaching. Prices must be advanced. The hosiery manufacturers who abandoned worsted yarn and manufactured worsted hosiery out of long stapled wool to give the smooth

TRY OUR
Silkine also Lisle Silk
FINISH
For Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, · R. I.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

WOOLEN and MERINO
YARNS.
EATON RAPIDS WOOLEN MILLS,
Eaton Rapids, Mich.

JAMES SPEED,
WORSTED and WOOLEN
YARNS
A SPECIALTY.
ALSO TOPS.
170 SUMMER ST., BOSTON.
Long Distance Tel. 4168-2 Main.

WOOLEN AND MERINO YARNS,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL,
Leominster, Mass.

J. BROADBENT & SONS,
WOOL SPUN YARNS.
YARNS FOR FLEECED LINED, and general Knit Goods our specialties. Equipment first-class. Prices low. Custom work of any kind. Get our figures.
UNIONVILLE, CONN.

FOR SALE.

COTTON WASTE,
Card Strips, Oily Card, Peeler, Sea Island and Egyptian Comber.

MANUFACTURER OF
Wool and Cotton Mixed Shoddies,
Camel Hair, Natural and White.

BUYERS of all kinds of hosiery and woolen and cotton Mill Wastes.

Chas. W. Becker, Agent, Amsterdam, N. Y.

SHODDY WM. H. H. SLACK & BRO.,
Springfield, Vt.

Carbonized Stock a Specialty. **FLOCKS**

M. B. SCHWAB, Pres. H. RAWITSER, Treas. ED. GLUECK, Sec. and Gen. Mgr.

RIVERDALE WOOLEN COMPANY,
MANUFACTURERS OF
SHODDIES OF EVERY DESCRIPTION.
CAPACITY 7,000,000 POUNDS PER ANNUM.
CUSTOM CARBONIZING AND GARNETTING A SPECIALTY.
RIVERDALE, NORTHBRIDGE, MASS. New York Office: 140 Duane Street.

WE BUY FOR SPOT CASH any Kind or Quantity Jobs of Woolens and Dress Goods. Seconds, Remnants, Odds and Ends a Specialty. Drop us a line and we will call.

H. & D. FEINGOLD, 89 & 91 Bedford St., Boston, Mass.
Telephone, Oxford 1431-2.

effect of worsted held their trade and made money. while those who used worsted yarn have been unable to secure advances on hosiery and in consequence have only held their own.

The knitters of fleece lined undershirts requiring wool yarn for backing are placing orders cautiously and will place orders only for actual requirements. The bad weather of June has undoubtedly affected the better line of underwear requiring much yarn. Some knitters have stated that their business had fallen off $10,000 during the month of June on account of the bad weather.

It is believed and expected that there will be a heavy duplicate business. This business is liable to come anytime after August and will be for the finer lines of underwear, calling for the better grades of stock.

The knitters are carrying no high cost material and are only buying what their actual requirements call for.

Cotton and cotton yarn are largely displacing wool and woolen yarn and the contrast in the manufacturers working cotton and cotton yarn is very great as compared with the manufacturers working wool and woolen yarn. The wool garments costing so much more the West especially are buying cotton garments in preference to the all wool garments and many woolen underwear mills are forced to make almost cotton underwear entirely, and those mills which are making underwear from cotton are well employed.

The mills making all wool garments are either shut down or are without orders.

Knitters of gloves and other fancy knitted fabrics are demanding much woolen yarns and business with the spinners making this class of stock is good.

Spinners on men's wear yarn for backing will find business checked as the light weight season is almost entirely a worsted season. Credits are being carefully scrutinized and those who do not meet payments promptly are sharply called for an accounting. We believe the last of the year will prove a very successful and profitable one.

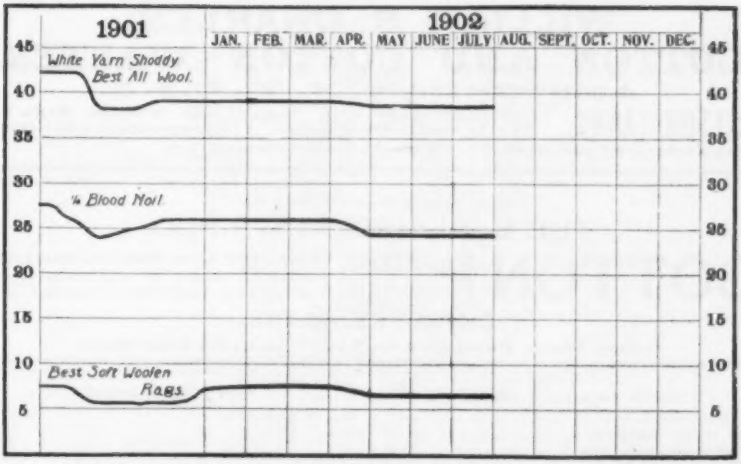


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

The Shoddy Market.

The market has continued quiet during the past month with no change in prices. This is the usual condition at this time of year, just before and during the opening of the light weight season in the goods market, and when manufacturers are far more interested in taking orders for finished goods than in giving orders for raw material from which to make goods that may not be wanted by the trade.

The feature of last month was the opening of the Waste and Shoddy Exchange in the Wool Exchange building in New York. This experiment will be watchod with much interest, and it is no exaggeration to say that there are few, if any, among buyers and sellers of shoddy and waste who do not desire that the new method of business shall be a success. The expense and inconvenience of the present syrtem by which individual seeks individual wherever he may find him, to buy or sell, are recognized by both parties to the transaction.

It is very desirable that the present venture inaugurated under such promising conditions shall be well managed, and the character of its present managers makes this very probable.

The strong position of wool is very encouraging to dealers in wool substitutes. When fine medium wool reaches 50 cents per pound, manufacturers begin to cast around for something cheaper with which to meet the call by the people for clothing at such a p e as they can afford to pay.

New clips are fairly active, while softs show no change from the dullness that has prevailed for some time past.

SHODDIES AND EXTRACTS.

White yarn, best all wool	23-40
White knit, all wool, best, fine	22-23
White knit, No. 2	23-25
Light yarn, extra fine	25-28
New pure indigo blue	22-25
Fine worsted, new black	26
New blue clip, best, fine	20-22
Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	15-20

Merino.

Fine light, all wool, No. 1	24-25
Medium light, all wool, No. 1	16½-17½
Medium light, all wool, No. 2	14-16
Fine black, all wool	20-22
Fine dark, all wool, best grade	17-18
Medium dark, all wool, No. 1	13-15
Medium dark, all wool, No. 2	12-13
Red knit stock, strictly all wool	19-20
Red flannel, all wool	19-20
Dark blue for hosiery, strictly all wool, No. 1	17-20
Dark blue for hosiery, not all wool, No. 2	12-14

DELAINE EXTRACTS.

Light	19-22
Medium light	15-17
Regular gray	12-13
Black	14-15
Fancy colors	16-20

WOOLEN RAGS.

Fine merchant tailors, all colors	8-9
Choice light colors	12-14
Browns	12-13
Blacks	9-10
Fine blues, plain	10-11
Fine dark	10-11
Medium dark	6½-7½

Worsteds.

Blue	15½-16½
Black	20-21

Serges.

New blue	15-16
New black	14-15

Flannels.

New scarlet	18½-22
New blue	17-18
Cloakings	3-4

WILLIAM B. CHARLES,
COTTON AND COTTON WASTES.
AMSTERDAM, N. Y., U.S.A.

COTTON YARNS. Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited.
Shepperdson's Code, 1878. Cable Address "Charles."

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.
Established 1840—Incorporated 1893.

THE S. BLAISDELL, JR., CO.

COTTON Egyptian, Peruvian, American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

SOFTS AND KNIT STOCK.

Soft woolens, best	6-6½
Old white flannels	14-16
White flannels, No. 2	11-12
Old red flannels	8½-9
Light blue flannels	6½-7½
Old blue flannels	6-7
Old plaids	5-7
White stockings	17-18
White hood stock	20-21
Clear hoods	7-8
Red stockings	7-8
Blue stockings	7-9
Fancy stockings, No. 1	7-9
Gray stockings	8-9
Black stockings	9-10
Knit stock comforters	6-7½
Red knit	8½-9
Light gray knit	8-9
New light fancies	14-15
New fancies	11-12

Merinos.

Light, fine	14-15
Light, coarse	7-8
Fine dark	9-10½
Dark, No. 2	5-6½
Coarse dark	4-4½
Blue	10-11
Blue—seamed	14-15
Black—unseamed	10-11
New black	18-20
Small	2½-3½
Bunting	6-8

NOILS.

Australian	48-50
Fine domestic	38-40
½ Blood	24-28
⅝ Blood	22-23
¼ Blood	17-19
Braid	21-22
Carpet (white)	14-15
Carpet (colored)	10-12½

Seedy.

½ Blood	35-37
⅝ Blood	27-30
¼ Blood	23-26

FLOCKS.

Shear, fine white, all wool	9-11
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7-8
Fine dark, all wool	5-6
Gig, fine, all wool	3-4
No. 1, black, all wool cut	6-7
All wool, fancy, shear and gig	2½-3½

COTTON WASTE.

No. 1 Spinners	8
No. 1 Machine	5-5½
No. 2 Machine	4½-5
Machine Cop	5½-6
No. 1 Cop	6
No. 1 Card	6½-7
No. 2 Card	4
No. 1 Oily Card	3-3½
No. 2, Oily Card	2-2½
Egyptian Card	7¼-7½
Peeler Combing	8¼-8½
Egyptian Combing	8¼-8½
No. 1 Linters	3½-4½
No. 2 Linters	3-3½
White Clips	4-5
Colored Clips	2-2½
No. 1 Picker	1¾-3½

Texas, Orange. A proposition has been made to J. W. Link, Mayor, by capitalists, relative to establishing a cotton factory at this place, the interested party to take 20 per cent. of the stock of the company organized for the purpose. The project is under consideration.

Rhode Island, River Point. The printing machines in the Clyde Bleachery & Print Works have been started up again and all the departments will be in operation by end of the week.

Rhode Island, Woonsocket. Alfred Tancre and Emilien Dossin, operating the Model Spinning Company, as co-partners, have dissolved partnership. Mr. Dossin will be sole proprietor of the plant hereafter.

South Carolina, Bennettsville. At a meeting held recently by the stockholders of the Bennettsville Mfg. Co., it was voted to merge the mill into the trust in which H. A. Fries is interested in forming of the cotton mills in the South. The stockholders will receive 85 per cent. of their stock in the preferred stock in the new company, 20 per cent. in common stock and 6 per cent. bonds, thus valuing capital of the company, now $226,000, at $305,000 in the new concern.

South Carolina, Spartanburg. A new cotton mill is projected near this place by a company in which Dr. H. A. Ligon and J. B. Cleveland are interested. The mill will be capitalized at $200,000. A site has been purchased and some stock subscribed.

ATLAS STAMP WORKS

SHEETINGS

40 yds

15 Whitehall St.
N. Y. City.

"One order binds you to us"

The Wm. H. Lorimer's Sons Co.

Manufacturers of

MERCERIZED YARNS

FOR ALL PURPOSES,

MERCERIZERS AND DYERS.

New York Office:
Room 911 New York Life Building,
346 Broadway,

Ontario & Lawrence Sts.
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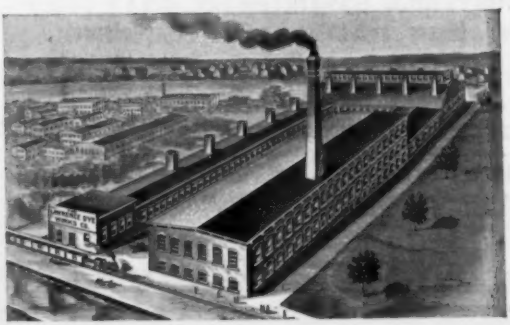

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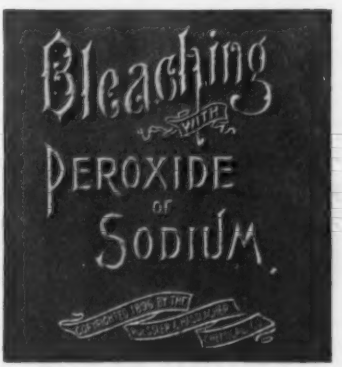

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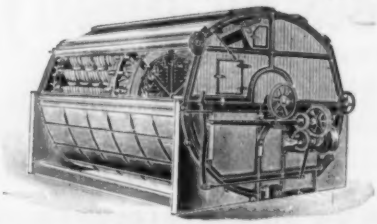

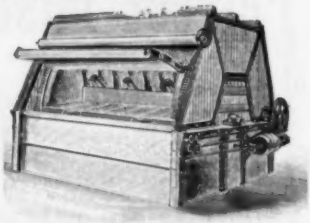

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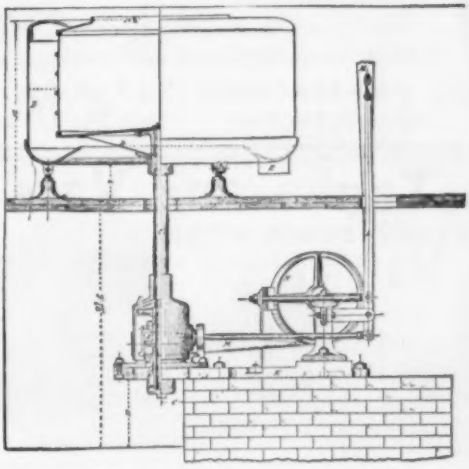

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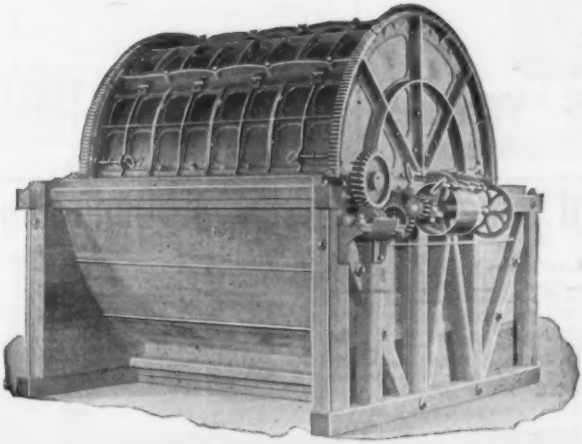

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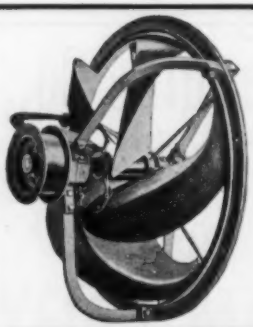

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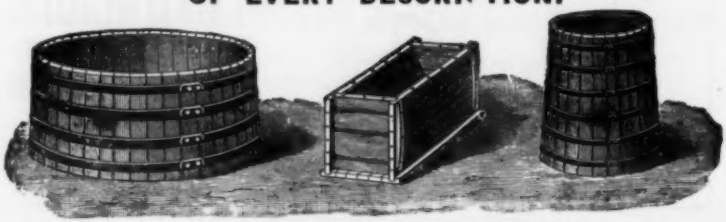

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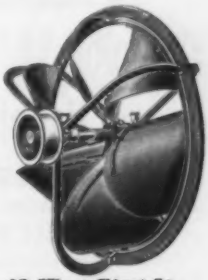

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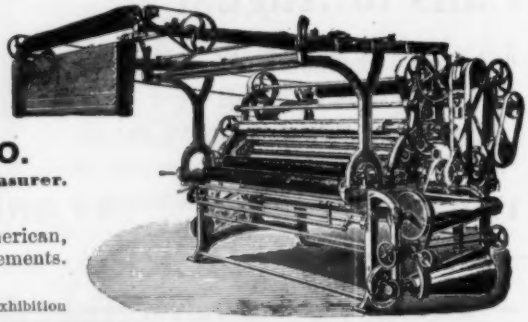

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New Works, 56 Cambridge St., near Webster Sq.

WORCESTER, MASS.

IMPORTANT IMPROVEMENT IN WORSTED SPINNING.

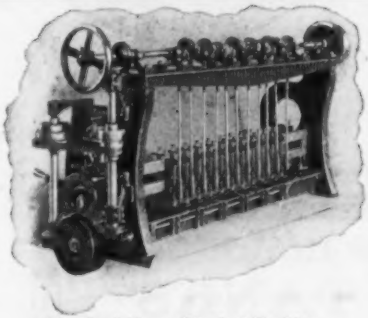
The Bamford Dust Proof and Self-Lubricating Spindle Tube saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all**, makes PERFECT YARN. Refer to largest worsted mills.

BAMFORD & SMITH, Pascoag, R. I.

ALSO MFRS. OF

STEEL CAPS AND SPINDLES.

CAPS, FLYERS, TUBES, Etc., REPAIRED.



Standard Horse Blanket Machine.

L. F. FALES,

Manufacturer and Builder of

Multiple Needle Sewing Machines

For Sewing Carpet Linings, Horse Blankets, Wadding, etc.

These machines can be built with any required number of needles.

SPECIAL MACHINERY DESIGNED AND BUILT.

Telephone Connection.

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THE TORRANCE MANUFACTURING CO

Sole Makers of the TORRANCE PATENT

Self-Acting Balling Machine

The attention of Woolen Manufacturers is invited to these Machines as convenient labor-saving appliances. The machine can be adjusted to make any size balls to suit lots, and the creel is constructed to carry twice the number of spools used by the old system.

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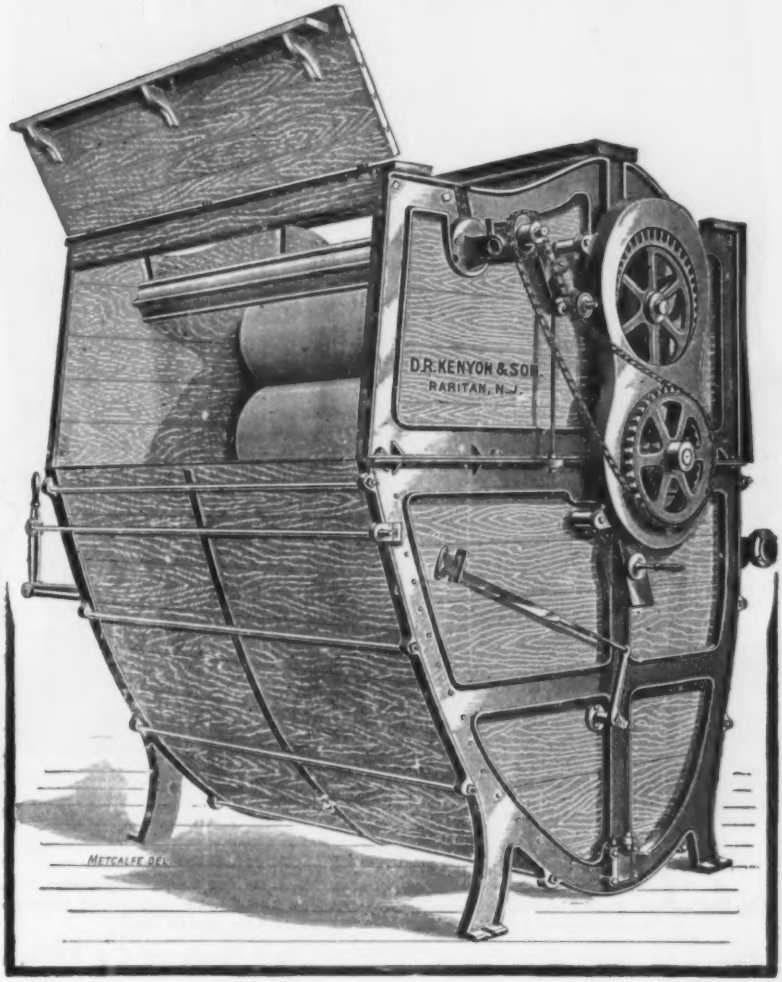
KENYON'S
IMPROVED CLOTH WASHER

— FOR —

FOUR SIX OR EIGHT STRINGS OF GOODS.



BEST QUALITY SOLID ROLLS.

Improved trough and valves, preventing wash of liquor and insuring quick and thorough scouring and rinsing.

D. R. KENYON & SON,

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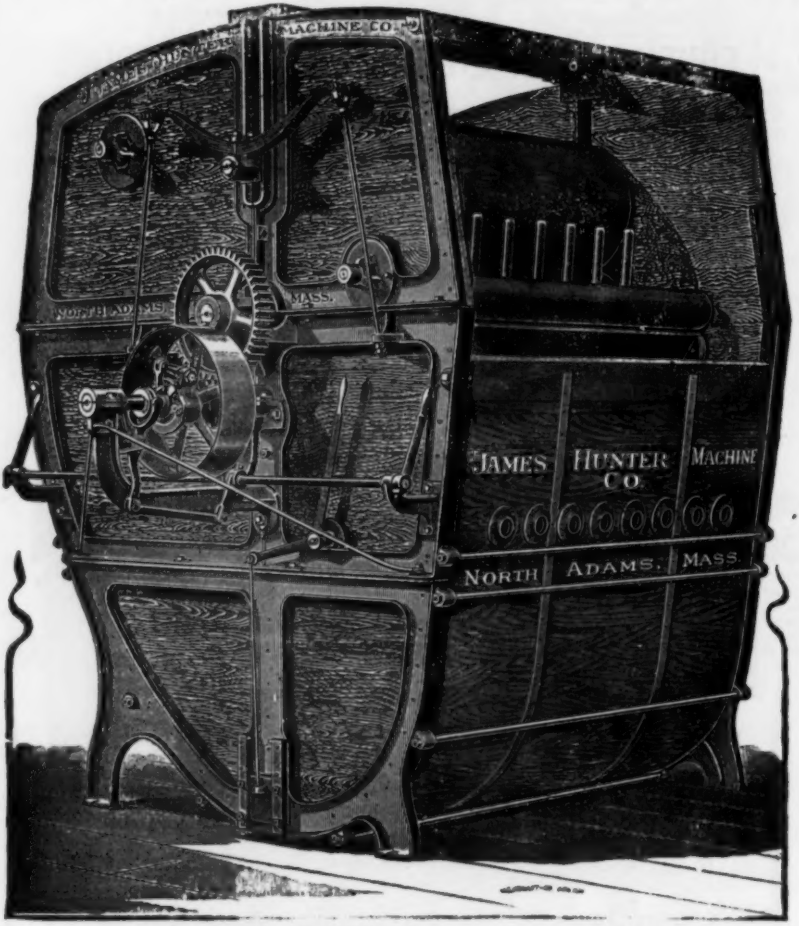
BUILDERS OF WOOLEN MACHINERY.

HUNTER'S IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.



Power transmitted by means of a Friction Pulley.
No Shifting of Belt to start and stop the machine.
Less power required than for any other Washer of equal capacity.
All Main Bearings are adjustable. All Bearings are on the outside of frames.
No dripping of Oil on the Goods, or in the Wash Box.

Also Combination Washer and Fuller for Knit Goods in the String.

Write for further particulars and prices

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North Adams, Mass.

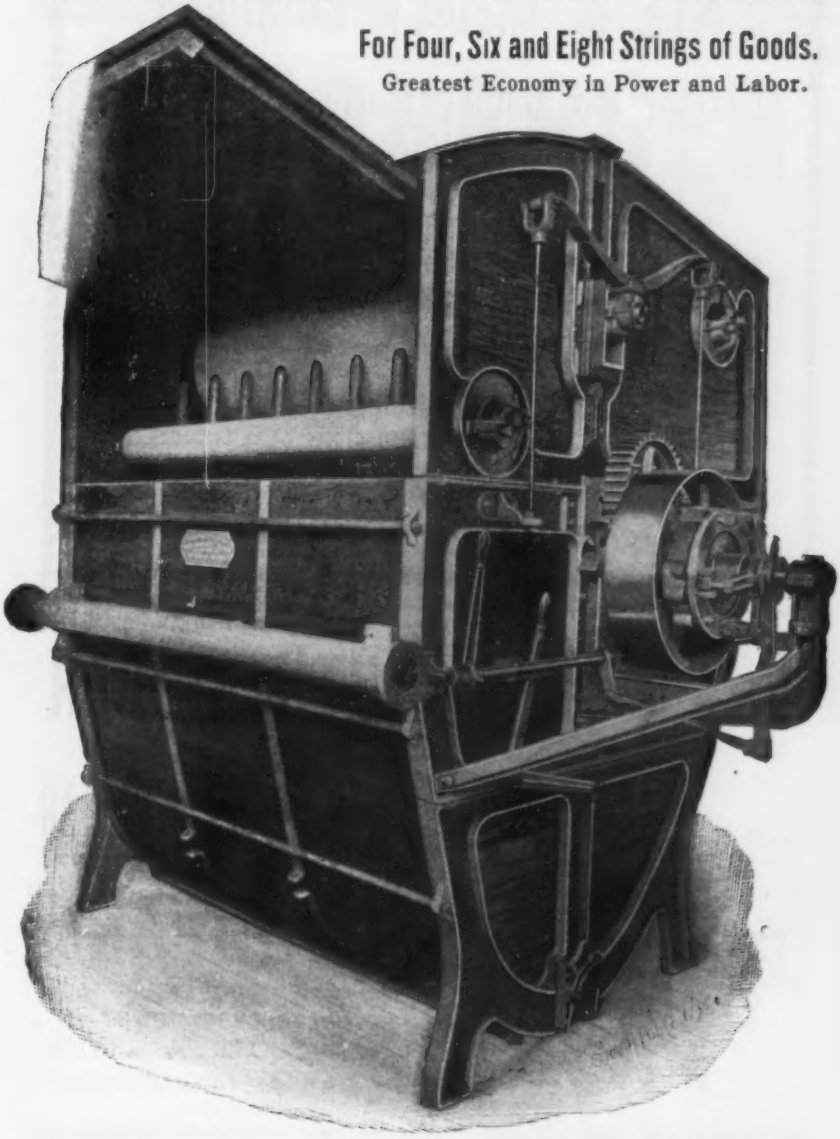
Boston Office, Room 67, Mason Building, 70 Kilby St.

Long Distance Telephone, 2954.

LATEST IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.

Greatest Economy in Power and Labor.



Unequaled for Capacity and Rapid Washing

All Kinds of Heavy and Light Goods are Desired.

Attachment for Washing and Fulling Knit Goods in the String.

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Circular Rib Knitting Machinery,

Underwear Machinery,

For Ladies' Vests, Combination Suits, Corset Covers, etc.
Men's Underwear, Sweaters, etc.

New Improved Sleeve Machines.

Machines for Rib Hosiery, Rib Tops and Cuffs.

LATEST IMPROVEMENTS ON ALL MACHINES.

MECHANICAL STOP MOTIONS
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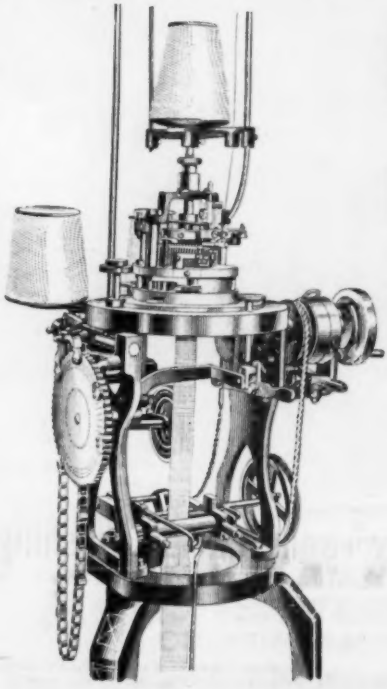

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For All Kinds of

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Entire New Design Ribber.
Protected by Patents
granted and others pending.

Excels in Quality of Fabric and Ease of Operation, Simplicity and Durability.

COSTS LESS MONEY.
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Absolute Guarantee With Each Machine.

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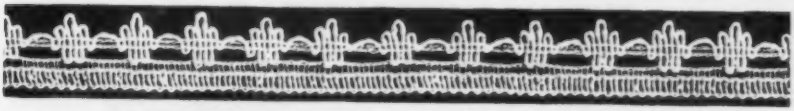

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Our Weekly Production

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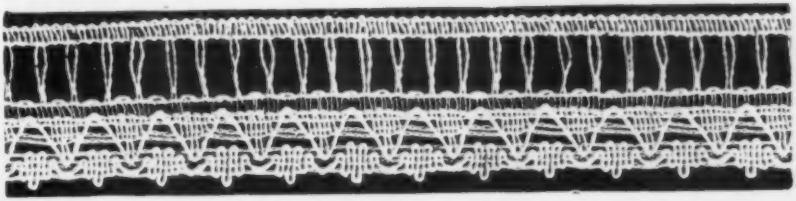

THE INVINCIBLE,
FULL AUTOMATIC KNITTING MACHINE

For SEAMLESS Hosiery

A BIG PRODUCER.

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PRACTICAL AND ECONOMICAL IN OPERATION.

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NO EXPERIENCE REQUIRED TO TRANSFER RIBBED TOPS BY THE INVINCIBLE METHOD.

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A MACHINE OF THE HIGHEST GRADE.

Write for Catalogue.

MANUFACTURED BY...

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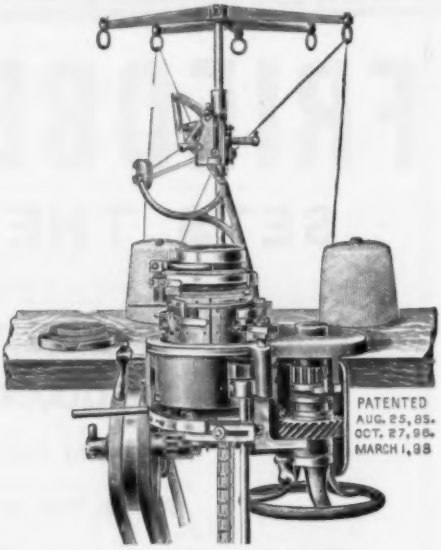
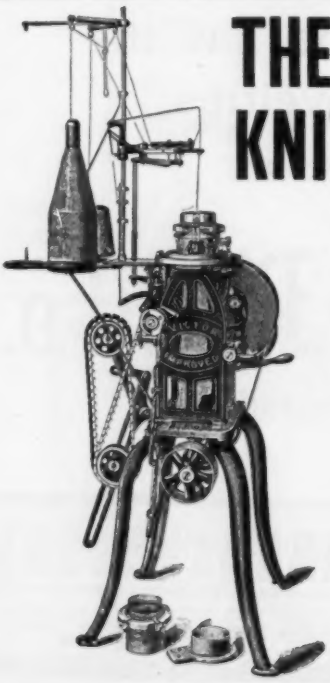


Factory and Main Office:
PAWTUCKET, R. I., U. S. A.
Branch Office, Room 270, Bourse Bldg., Phila., Pa



THE "NEW" VICTOR KNITTING MACHINE

A full Automatic Seamless Hosiery Machine. Thoroughly Interchangeable in all its parts. Automatic Two-color Striping Machine, also Black-Leg White-Foot Machine and Lace Machine.

American Knitting Machine Co.

Main Office, Room 5, Knickerbocker Building,
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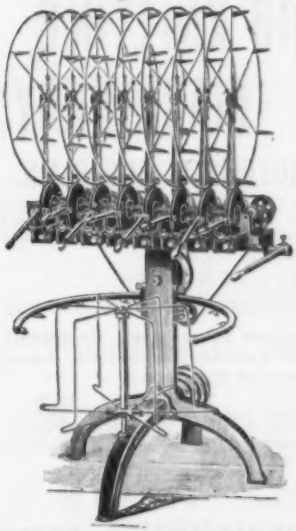
PHILADELPHIA, - - PA.

Southern Branch, Charlotte, North Carolina.
R. M. Oates, Representative.

FACTORY AT WOONSOCKET, R. I.

JAMES TAYLOR,

Knitting Machinery for Hosiery and Underwear



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

New and Second Hand.

SPECIALTIES IN NEW.

Sole Selling Agent for Stafford & Holt.

UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR,

Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

Builder of the **ONLY BACK-WINDING MACHINE** in the market. Ravels and backwinds all classes of Knit-Goods, including plated work and fabric made on 8-feed plain or tuck machines.

All inquiries and orders relating to the above machines should be addressed direct to me.

LARGE STOCK IN SECOND HAND.

Everything pertaining to the manufacture of all classes of Knit Goods, for example: Machines for Ribbed and Flat Underwear Hosiery, Sweaters, Jackets, Mittens, Gloves, Borders, Facing, and Gas Mantles, Buttonhole and Button sewing Machines, Concealed Stitch Welters and Trimmers, Union Specials, Steam Presses, Winders, Ribbers, Sleevers, Loopers, Whizzers, Stop-motions, Cylinders and Dials, Needles, Pins in bulk, Brass Stamps, Stamping Ink,—in short, write us if you are in need of anything, or if you have any Machines for sale.

835 ARCH STREET, PHILADELPHIA, U. S. A.

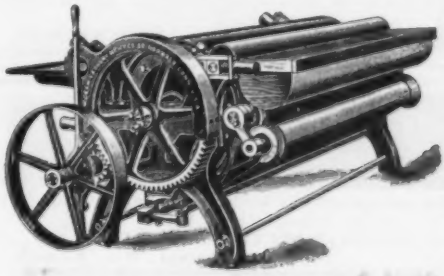
CIRCULAR RIB KNITTING MACHINES,

Carefully designed and well made with Solid Forged Steel Cylinderr and Dials, Segmental Cam Rings, Encased Take-up, Stop Motions, etc. Standard Sizes, Reasonable Prices. Also

KNITTING MACHINE CYLINDERS AND DIALS.

STAFFORD & HOLT. - Little Falls. N. Y

AUTOMATIC IRONING AND PRESSING MACHINE FOR KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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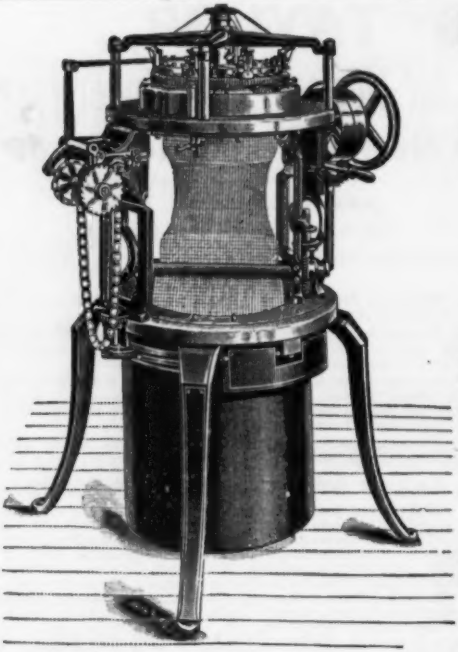
SOUTH NORWALK, CONN.



McMICHAEL & WILDMAN
MFG. CO.

RIB KNITTING MACHINERY,

AUTOMATIC AND PLAIN,

For all classes of Ribbed Hosiery and Underwear, Combination Suits Sweaters, etc.

ESTABLISHED REPUTATION FOR

Largest Production. Best Quality Fabric. Durability. Economy of Operation.

Full particulars, Description and Samples furnished upon Application to the

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THE LAMB

LEADER OF KNITTERS

ORIGINAL and BEST
PARTS INTERCHANGABLE
EASILY and QUICKLY OBTAINED

Hosiery and Sweater
Cardigan Jacket
Automatic Racked Border
Full Fashioned Union Suit

MACHINES

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J. E. WOODHEAD,
100 22nd Street,
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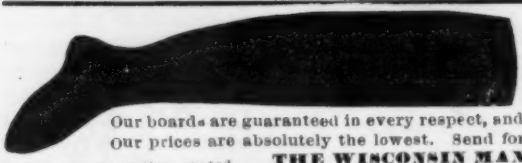

We have recently greatly enlarged our facilities for the manufacture of Hosiery Boards, Press Boards and Dye Boards of all descriptions. Our boards are guaranteed in every respect, and the peer of any in the market. Our prices are absolutely the lowest. Send for price list.

Eastern representative wanted.

THE WISCONSIN MANUFACTURING CO.,
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CRANE MF'G CO
LAKEPORT, N. H.

Spring Needle Circular Knitting Machine

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

RILEY'S PATENT RIGGING CUTTING FOLDING **MACHINES**

For all kinds of Gray or Finished Stuffs, Woolens, Worsteds, etc.

CHAS. A. JOHNSON & CO. { SOLE AMERICAN AGENTS.

New York and Providence.

PAXTON & O'NEILL'S

3-4 Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

Exclusive rights to Brown's ATTACHMENTS FOR LACE EFFECT.

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Cylinders and Dials for all size machines.

BRANSON MACHINE CO.

506 N. American St., PHILADELPHIA, PA., **Pioneer Builders of**

Knitting - Machinery

FOR SEAMLESS HOSIERY.

Estimates for Plants Complete.

Write for information and catalogue.

Knitting Machinery

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KENNEDY'S KORRECT KUTTERS

THE VERY BEST

For Bands, Stays and Facings,
Suspender Straps, Gussets,
Drawer Bands,
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Our New Improved Light-Running Short Carriage

KNITTING MACHINE

unsurpassed for full-fashioned Sweaters, Jackets, Leggins, regular Knit Underwear, Union Suits, and all other *regular* and *selvage* Knit Garments. Made with 2 complete yarn-carriers and 2 color striping attachment and has the new combined Sweater Stitch Drop Lock and Tubular Lock. Special Glove Machines Finger Knitting Machines 3 inches width of needle bed. Rapid 2-thread Lock stitch Overseamers.

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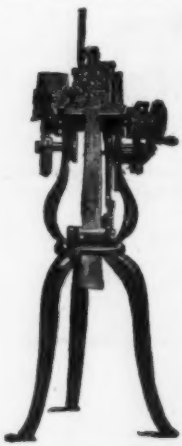

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LAKEPORT, N. H.

Successors to PEPPER MANUFACTURING CO.

MANUFACTURERS OF

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INCLUDING

Pepper's Flat Ribbed Cuff Machines,

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GOLF AND BICYCLE STOCKING MACHINES,

ALL KINDS OF

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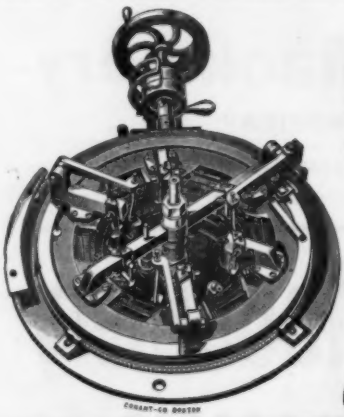
For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

CORRESPONDENCE SOLICITED.



CIRCULAR

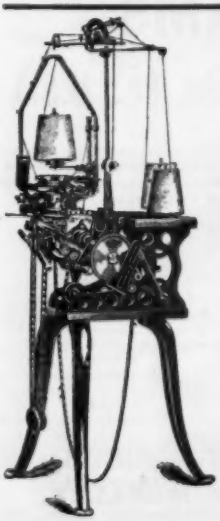
KNITTING MACHINES

Either plain or full automatic, with stop motion complete, for

RIBBED UNDERWEAR.
SWEATERS,
CARDIGANS,
CUFFS and ANKLETS.

The Leighton Circular Machines are the only ones which **Rack** or **Shog** the needles for fancy borders; also built for automatic striping; and with from 4 to 16 feeds for underwear.

Leighton Machine Co., Manchester, N. H



Excelsior Knitting Machine Manufacturing Co.,

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Knitting Machinery

Two-Feed 7-8 Automatic for Ladies String Work, also Black Legs with White Feet.

Regular 7-8 Automatic for all classes of Cotton Hose. Special 3-4 Automatic for Wool.

Excelsior Knitting Machine Mfg. Co.

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H. BRINTON & CO.,

213-215 Race Street,
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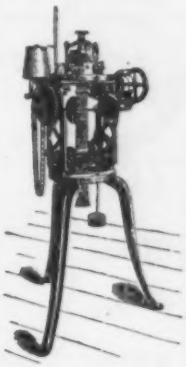
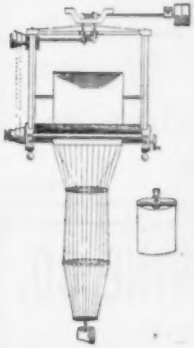
BUILDERS OF

Full Automatic Seamless and Ribbed



Knitting Machinery.



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All manufacturers of Tubular Knit Goods that want the best are buying the JOHNSTON PATENT VERTICAL DRYER. They have no equal, so say the presidents and superintendents of mills that have tried them, when properly put up. One order brings more. Have no traveling salesman. Sold direct by

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GAS ENGINES for city or country.
BRUSHING MACHINERY
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EFFICIENT
DURABLE
LOW IN PRICE.

WILFRED WELLS,

SOLE MANUFACTURER OF THE

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PATENTED JANUARY 7, 1896.

The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.

Blocks for Printing Hosiery.

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BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS. T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA

TRADE MARK.

Business est. in 1859.

WILLCOX & GIBBS

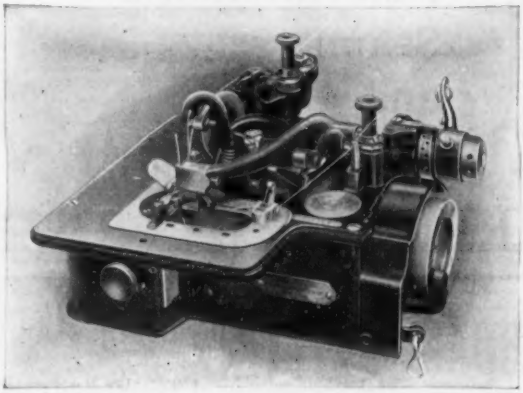
"OVERLOCK" MACHINE.

(TRADE MARK.) (Pat. Apr. 5, 1892.)
(Patent twice upheld by U. S. Court of Appeals.)

For TRIMMING, SEAMING, and OVEREDGING (or HEMMING) KNIT UNDERWEAR.

3,000 STITCHES PER MINUTE

12 to 20 STITCHES PER INCH



The "Overlock" Elastic Stitch is equal to the full stretch of the Goods

WILLCOX & GIBBS SEWING MACHINE CO.,
658 BROADWAY, NEW YORK CITY.
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THE ARNOLD SEWING MACHINE CO.

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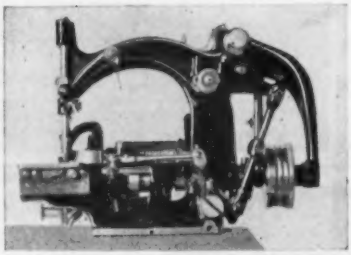

Overedge Welting Machine, with Trimmer.
The very best in the market.
(No royalty.)

Overedge Seaming Machine, with Trimmer.
3000 stitches per minute.
(No royalty.)

Overedge Sewing Machine, without Trimmer.
For manufacturers of knit goods and other fabrics, with or without trimmers.

Our claims are SIMPLICITY,
DURABILITY,
ACCESSIBILITY,

Every part of our machine being readily accessible.
This machine has 100 less parts than any other overedge machine.

THE CHEAPEST AND BEST METHOD

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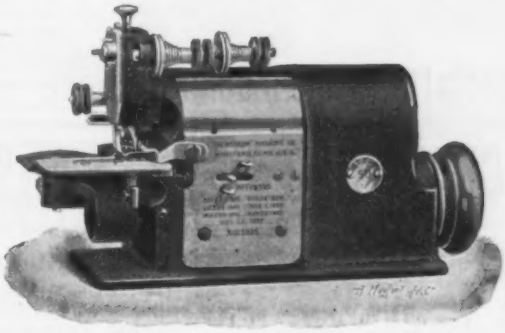
FINISHING RIBBED KNIT GOODS

IS BY THE USE OF

Our High Speed Machines.

Blankets, Skirts or Cotton Goods,

requiring a useful and Ornamental Finish, should be finished by some of our various machines adapted for special purposes and finishes.



Send for Catalogue and Samples, stating the kind of goods to be finished.

THE MERROW MACHINE CO.,

346 Broadway, New York. **Hartford, Conn.** Bourse Building, Philadelphia.

Single "Interlock" Machine

(Trade Mark.)

FOR OVEREDGING, HEMMING AND SEAMING.

Especially Adapted to UNDERWEAR AND HOSIERY.

Class 12900.

Elastic Seam, Hem or Edge Finish.

High Speed.

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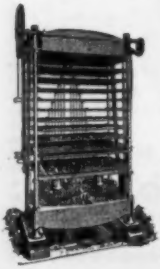
Union Special Sewing Machine Co.

THE CRAWFORD

HOLLOW STEAM

Plate Press



For Knit or Woolen Goods.

The most reliable machine of the kind on the market.

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Successors to

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DOUBLE THREAD,
ELASTIC STITCH,
SEAM TRIMMING and
CONCEALED WELTING

Machine,

FOR HOSIERY AND UNDERWEAR.

Trimmers put on all Makes of Machines.

Correspondence Solicited.

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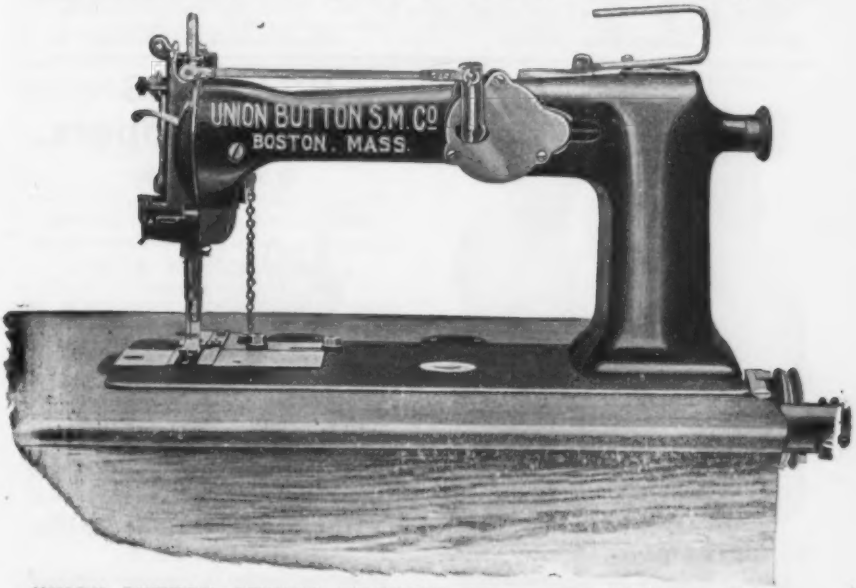

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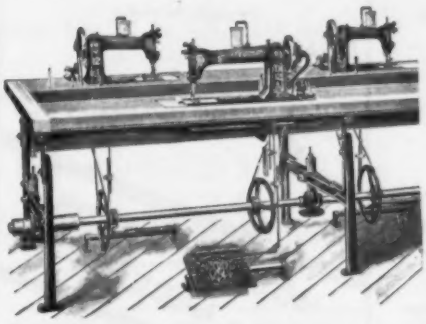

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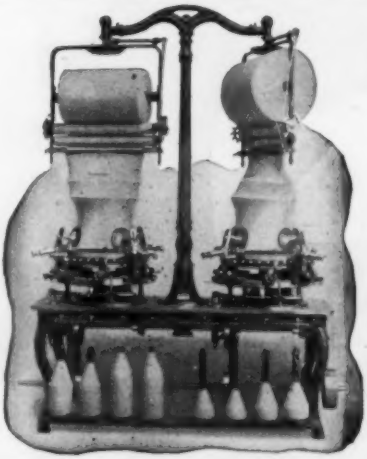

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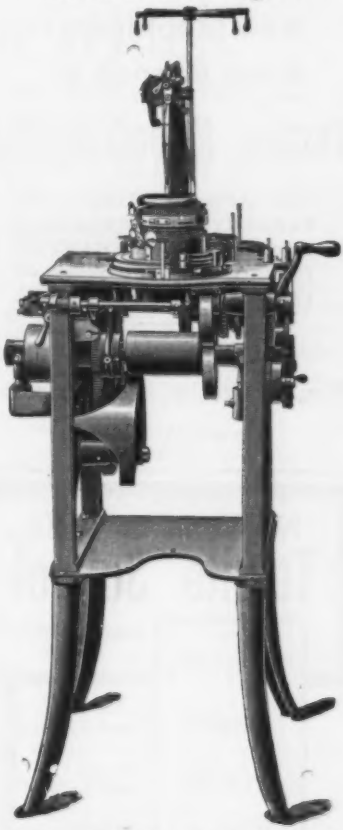

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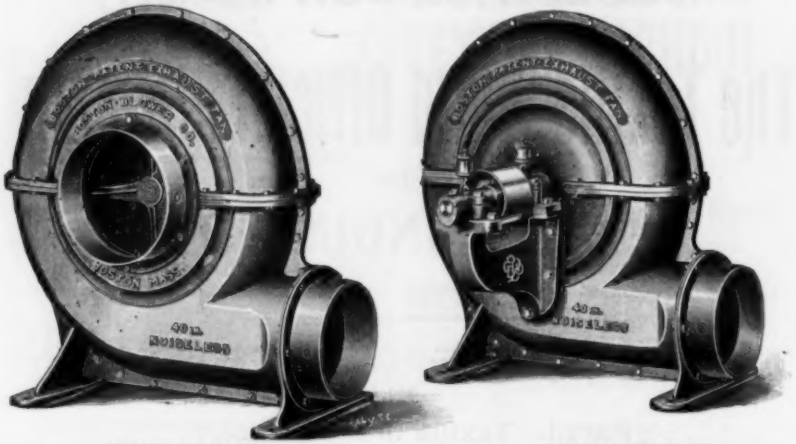

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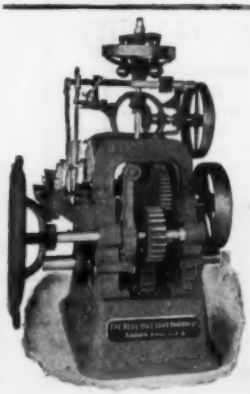

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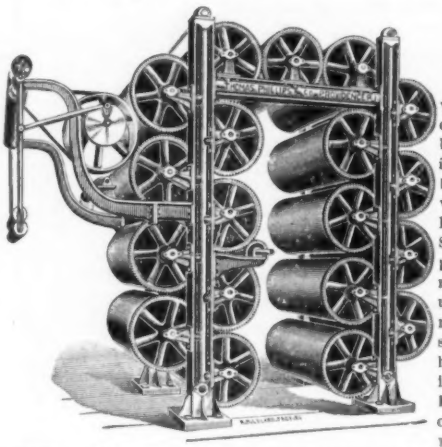

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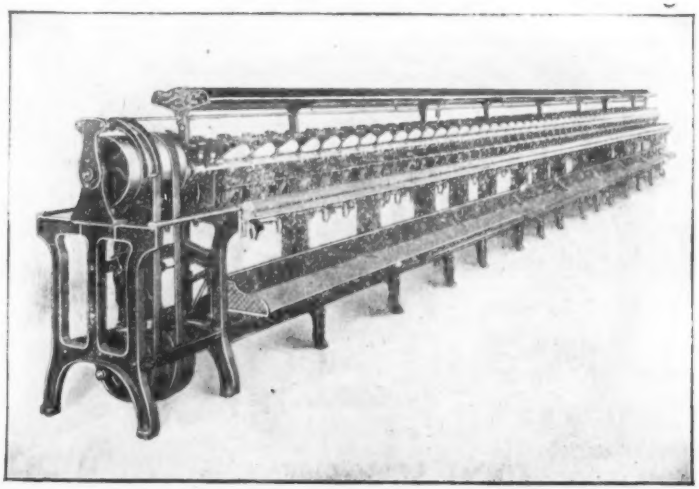

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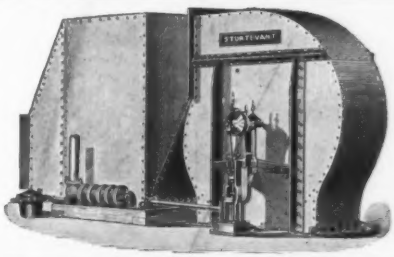

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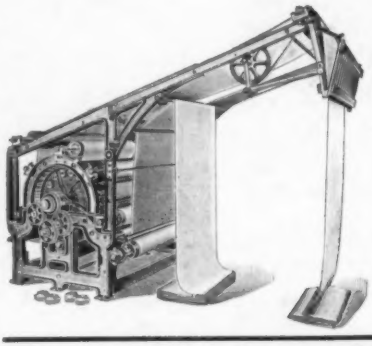

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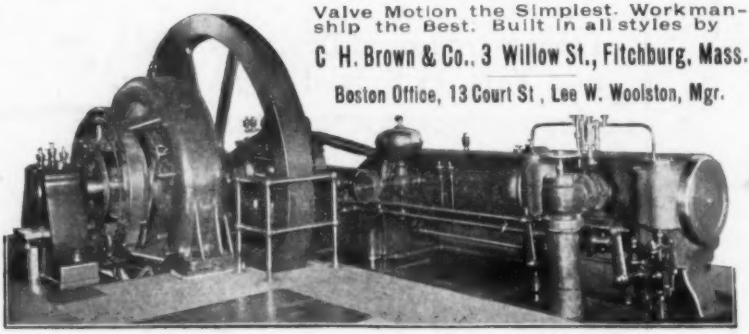

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